RESIDENT ATTITUDES AND BELIEFS TOWARD BISON, DISEASE AND MANAGEMENT IN WOOD BUFFALO NATIONAL PARK

by

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ABSTRACT

This study investigates the human dimensions (HD) of wood bison conservation in Wood Buffalo National Park of Canada (WBNP). Use of a quantitative questionnaire uncovers Aboriginal and non-Aboriginal attitudes toward wood bison, disease, and management approaches. Focus groups with local Aboriginal community members revealed themes related to bison and their management in and around WBNP. These investigative instruments show that the majority of both Aboriginal and non-Aboriginal participants support the presence of wood bison in WBNP, despite prevalence of disease. This support extends to protection offered to wood bison through park management. There is low support for the destruction of the entire WBNP population as a means of managing disease. While there is consensus amongst Aboriginal and non-Aboriginal residents regarding the acceptability of various management options, Aboriginal residents consider bison more valuable for ceremonial, spiritual, economic, and food purposes than non-Aboriginal respondents. Strongly emphasized throughout the focus groups are issues of trust, communication, and participation between local Aboriginal groups and WBNP decision-makers. Wildlife managers in national parks are increasingly using public participatory approaches when making decisions in order to produce management plans that are more publicly acceptable. By identifying local perspectives regarding the management of diseased bison, this study brings interest group input into decisions regarding wildlife management, which is crucial to successfully implementing wildlife management decisions.

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List of Abbreviations

ACFN – Athabasca Chipewyan First Nation

AB – Alberta

FCMN – Fort Chipewyan Métis Local 125

FSMC – Fort Smith Métis Council

HD – Human Dimensions

MCFN – Mikisew Cree First Nation

NT – Northwest Territories

SLFN – Smith's Landing First Nation

SRFN – Salt River First Nation

TEK – Traditional Ecological Knowledge

WBNP – Wood Buffalo National Park

Glossary of Main Concepts

Aboriginal peoples: original peoples of North America and their descendants. In Canada they consist of First Nations, Inuit, and Métis (Aboriginal Affairs and Northern Development Canada, 2013: https://www.aadnc-aandc.gc.ca/eng/1100100013785/1304467449155)

Attitudes: a person's "favorable or unfavorable evaluation of a person, object or action" (Vaske & Manfredo, 2012, p. 44)

Beliefs: "thoughts about general classes of objects or issues that give meaning to more global cognitions represented in values" (Decker, Riley, Siemer, 2012, p. 259)

Human Dimensions: "the aspects of wildlife management involving human attitudes and behaviours" (Decker, Brown, & Siemer, 2001)

List of Appendices

Co-Authorship Statement

Two papers have emerged from this dissertation. The candidate is the first and corresponding author. The author i) designed and identified the research proposal, ii) conducted all practical aspects of the research, iii) performed data analysis, and iv) prepared the manuscript.

The first manuscript, "Understanding Aboriginal and non-Aboriginal beliefs and attitudes toward wood bison management: A case study of Wood Buffalo National Park of Canada" was a collaborative effort with Dr. Carly Sponarski and Dr. Alistair Bath. It is being submitted for publication in the Human Dimensions of Wildlife journal.

The second manuscript, "Fostering Relationships: Aboriginal Peoples, Bison, and Wood Buffalo National Park of Canada" was a collaborative effort with Dr. Alistair Bath. It is intended for publication in the Journal of Northern Studies.

Part I: Background of the Research

1.0 Dissertation Overview

This master's thesis is the result of a collaborative effort between Memorial University, Wood Buffalo National Park of Canada, and the Aboriginal and non-Aboriginal people of Fort Chipewyan, Fort Fitzgerald, and Fort Smith, Canada. The proposal for this research was reviewed and approved by all local Aboriginal leaders, a research license was granted by the Aurora Research Institute, and the Interdisciplinary Committee on Ethics in Human Research found the study to be in compliance with Memorial University's ethics policy. The goal of this project is to gain an understanding of the perspectives of local people regarding bison disease and management in Wood Buffalo National Park. With a social science approach, the theme of this dissertation is the human dimensions (HD) of conservation and the role that local attitudes play in the conservation of wood bison (*Bison bison athabascae*).

The capacity to involve and understand local peoples' attitudes toward wildlife and decisions regarding the future of wildlife is an objective that wildlife managers worldwide are undertaking. The presence of disease in wildlife can impact how people feel about an animal, and in turn, their opinions on best management practices. Through an understanding of attitudes and beliefs, HD research focuses on recognizing conflicts that exist and identifying how these may be resolved (Decker, Brown, & Siemer, 2001). HD research presents the opportunity for managers to "identify areas of support for

different management options and target specific weaknesses in the knowledge that affects attitudes" (Glikman, 2011, p.1). Though at first daunting (and quite possibly presenting political and logistical challenges), it has been demonstrated that public input into decision making regarding wildlife is not only beneficial but also crucial to the success of management plans, since the consideration of interest group attitudes and beliefs can aid in mitigating unnecessary conflicts (Decker et al., 2006).

This thesis presents a case study wherein the attitudes and beliefs of local people in two regions of Wood Buffalo National Park (WBNP) are examined. Specifically, it looks at Aboriginal and non-Aboriginal attitudes toward wood bison, disease, and possible management decisions. The following chapter, Part I, is the background of the research, consisting of the research goal and objectives, study area, methods, an introduction to human dimensions – placing it within the context of the discipline of geography and a discussion of the history of Aboriginal peoples and national parks. This manuscript-based dissertation consists of two papers in Part II which address specific objectives and disseminate the results of this study. These two stand-alone papers are designed for publication and describe the quantitative and qualitative approaches to this study. Finally, Part III of this dissertation offers a conclusion to this thesis by summarizing key findings from the two papers and describing how the results from both methods of inquiry connect. Additionally, this chapter also gives recommendations for how the results from this study may be used by decision makers and how future studies could build on this work.

1.1 Research Goal & Objectives

Using a human dimensions approach, the goal of this study is to understand Aboriginal and non-Aboriginal residents' attitudes toward wood bison, disease (bovine tuberculosis, brucellosis, and anthrax), and management options for bison in Wood Buffalo National Park as well as key issues important to local Aboriginal groups regarding bison and park management in general. Subsequent research objectives emanating from this central research goal consist of:

i) Quantitatively documenting and exploring differences between Aboriginal and non-Aboriginal attitudes toward wood bison and disease - specifically bovine tuberculosis, brucellosis, and anthrax.

ii) Understanding which management options for wood bison in WBNP are supported or opposed by Aboriginal and non-Aboriginal residents.

iii) Exploring key issues important to members of the Aboriginal groups in Fort Chipewyan and Fort Smith regarding bison and their management in and around WBNP through the emergence of themes.

The first two objectives are met by the first paper, which is based on a quantitative research instrument implemented through personal interviews and designed to address two main concepts: (a) normative beliefs toward bison and (b) attitudes toward potential bison management decisions. This paper explores differences between Aboriginal and non-Aboriginal responses. In addition, since geographers are often interested in how attitudes vary over space, in this case differences in attitude are examined between the

area of Fort Smith and Fort Fitzgerald area (referred to simply as *Fort Smith*) and the town of Fort Chipewyan. This portion of the study helps to quantify specific attitudes regarding bison, management and disease. It is written and formatted to meet the requirements of the academic journal, *Human Dimensions of Wildlife*.

The third objective is met by the second paper, which describes the qualitative portion of this study. Using focus groups as the method of inquiry, the results are divided into themes that aid in a broad understanding of the views and meanings that the local Aboriginal groups attribute to bison, disease, and management. These focus groups have produced a very rich set of data, not all of which can be discussed in this master's thesis. This paper specifically focuses on two overarching themes that emerged from the interviews. The first theme builds on the quantitative chapter by offering a deeper understanding of Aboriginal feelings and knowledge regarding bison, disease and management. The second theme draws attention to long lasting issues of lack of trust and poor communication between government represented by Parks Canada and Aboriginal groups. This paper is intended for academic publication in the *Journal of Northern Studies*.

2.0 Introduction

2.1 Literature Review

2.1.1 Human Dimensions of Wildlife & Geography

Geography as a discipline is vast, encompassing both human and physical processes through its set of four traditions: spatial, area studies, earth science, and the human-environment relationship (Gauthier, 1991; Pattison, 1964). The human-environment relationship, otherwise known as the *man-land tradition* (Pattison, 1990), dates back to Hippocrates in the 5th century and thereafter social Darwinism of the 19th century, which "practically overpowered American professional geography in the first generation of its history" (Pattison, 1990, p.204). This led to a long history of geographers exploring human perceptions toward the environment (Marsh, 1864; Leighly, 1963; White, 1966; Giordano, 2003) which gained importance throughout the environmental movement of the 1960s (Pattison, 1990, p.204). Glikman (2011) posits to extend geography's scope into the human dimensions of wildlife which clearly "falls within the human-environment" tradition and "is a natural progression" (Glikman, 2011, p.12). It can therefore be argued that HDW naturally fits within the realm of geography.

2.1.2 Human Dimensions – A brief history

The human dimensions of wildlife is indeed a new field in academia that is rooted in the geographical tradition. Prior to the 1950s in North America, writers had begun to express insights into the human relationship with the environment. Then, after World War II human use of national parks, forests, and wildlife refuges increased substantially in

North America, which prompted recognition of "the changing use of the American landscape" (Brown, 2009, p. 1-2). This led to the establishment of the United States National Park Service (1956), the Outdoor Recreation Resources Review Commission (1958) and the Wilderness Act (1964), among other political decisions (Brown, 2009). The relationship between people and wildlife never got serious attention until the publication of Douglas Gilbert's 1964 book entitled *Public Relations in Natural Resources Management*, which dealt with theoretical and practical communication important to effective wildlife management (Decker, Brown, Siemer, 2001). Until the 1960s wildlife managers' focus was on fishing and hunting (Brown, 2009). This changed as Americans' use of the landscape and wildlife changed.

With this growing attention on human interaction with the environment, there was a push for more social science research in this domain. The term *human dimensions* was coined in the 1970s to "capture the aspects of wildlife management involving human attitudes and behaviours" (Decker et al., 2001, p.xi). It is a field in the social sciences defined simply as the study of "what people think and do about wildlife and wildlife management and why they think and do that" (Decker et al., 2001, p.xii). This field grew in response to historical and social factors that emerged in the United States wherein people began to increasingly use and interact with wildlife and the environment. Human dimensions as a response was prompted by society's demand for knowledge that would aid in management in wildlife decisions. The argument for human dimensions research was that while biology provided data on wildlife species, more information was needed to address "management" – type questions. Brown (2009) insists that research in the field

was very much prompted by government policy, including the establishment of natural resources departments and laws regarding fish and wildlife.

In the decades since the birth of HD, the field has expanded globally and has included both applied and theoretical work. Research and publications throughout the 2000s have been dedicated to examining adaptive management practices (Riley, Decker, Carpenter, Organ, Siemer, Mattfeld, Parsons, 2002), comparing hunters and environmentalist motivations (Knezevic, 2009), and looking at recreationists' attitudes (Jett, Thapa, & Ko, 2009). There has been an emphasis on understanding different types of wilderness users and their beliefs and attitudes towards wildlife as well as the complex relationships between interest groups.

2.1.3 Aboriginal Peoples & National Parks

Since the establishment of the world's first national park, Yellowstone in 1872, and the world's first national park system, in Canada in 1911 (Campbell, 2011), the national park model has become a standard method for conservation worldwide (Dearden & Langdon, 2009; McAllister, 1999). Rather than being autonomous, isolated regions, it has been established in parks and protected areas literature that parks are intricately connected to their surrounding areas (Garratt, 1984; Hough, 1988; Janzen, 1983; McCleave, 2006; Zube, 1995). With the majority of national parks "surrounded by human populations that interact in some way with the protected area" (Schelhas & Pfeffer, 2005, p.388), tensions between parks and local people are not uncommon and are attributed to "historical uses of

park resources by local people and differences in the way park managers and local people view nature and the purpose of protected areas" (Schelhas & Pfeffer, 2005, p.388). In Canadian parks, these problems include, but are not limited to poor collaboration, inadequate communication (McCleave, 2006; Danby, 2002; Parks Canada, 2000; Beresford and Phillips, 2000), and a lack of trust between parks and communities (Bissix et al., 1998; McCleave et al., 2004; McCleave, 2006; Sandlos, 2008).

The establishment of national parks in North America has meant that many national parks have been created on claimed traditional Indigenous land. In Canada, this began with Banff, Canada's first national park which was established in 1885 after a large portion of southwestern Alberta was relinquished by the Blackfoot, Peigan, Blood, Tsuu T'ina (Sarcee), and Stoney to the federal government in Treaty 7 (Dearden & Langdon, 2009; Binnema & Niemi, 2006). The numbered treaties guaranteed hunting and fishing access, but were subject to change by the government (Binnema & Niemi, 2006). Similarly, the establishment of many national parks in Canada prior to the 1982 Constitution Act involved little to no consultation with the local Aboriginal peoples (Dearden & Langdon, 2009). Indeed, policies for wildlife management in Canada were largely in conflict with Aboriginal and treaty rights (McCormack, 2010, p.245) and in many instances Aboriginal peoples were forcibly removed from their traditional lands during the late 19th century period (Sandlos, 2014; Sandlos, 2008).

The policy of expropriating land from non-Aboriginal landowners and removing Aboriginal peoples from lands destined to become national parks began during the term of the first commissioner of the Dominion Parks Branch, James B. Harkin from 1911-36 (McNamee, 2010; MacEachern, 2001). In consequence, this approach "fostered negative

relationships between the parks and the communities for years, sometimes generations (McNamee, 2010, p.143).

Various scholars have suggested motivations as to why governments in the United States and Canada chose to expel Indigenous peoples from wilderness parks in the 19th and 20th centuries. Romanticism, the predominant nature aesthetic of the time, suggested that "by approaching large, wild nature that bespoke no human presence, the viewer could hope to glimpse a spiritual infinity through a geological one" (MacEachern, 2001, p.34). Some suggest that fostering a national identity in the United States and Canada was associated with colonial ideas of division and displacement; with wilderness viewed as places beyond human involvement (Haila, 1997; Willems-Braun, 1997). American identity, according to Cronon, was tied to the idea of the frontier and it was no coincidence that the establishment of national parks "began to gain real momentum at precisely the time that laments about the passing of the frontier reached their peak" (Cronon, 1995, p.77). Others say that the expulsion of Indigenous peoples from Canadian and U.S. parks was not purely to keep these areas uninhabited, but for the purposes of tourism, game conservation, sport hunting, and assimilation of Indigenous peoples (Binnema & Niemi, 2006).

As a result of public pressure, the Government of Canada discontinued expropriation when establishing and expanding national parks. The 1982 Constitution Act resulted in changes in how the Parks Canada Agency conducts business, and today most national parks that have been created have "working relationships with Aboriginal people" (Dearden & Langdon, 2009, p.374). Furthermore, since 2004 the Canadian government is legally obligated to "consult with an Aboriginal group where it has real or constructive

knowledge of the potential existence of Aboriginal right or title, which are claimed but unproven" (Parks Canada, 2011, p.6).

According to Willems-Braun, "nature is never a 'pure' category, [... rather] it is always invested with and embedded in social histories" (1997). The creation of protected areas continues to be the "cornerstone of strategies to conserve biodiversity worldwide" (Murray & King, 2012, p.385), however, present day Aboriginal groups in Canada are more empowered than in the past and want to play, or are asking to play, an ever increasing active role in the establishment and management of new national parks (Thomlinson & Crouch, 2012). Today national parks not only involve more collaboration with Aboriginal peoples, but Aboriginal groups are now leaders in national park establishment (McNamee, 2010; Dearden & Langdon, 2009). According to Notzke (1995), Aboriginal groups "strive for participation in the management of (...) resources, and (...) they want to share in the power to make decisions about the fate of the land and the resources it supports" (p.188).

3.0 Study Area

Bordering Northern Alberta and the Northwest Territories (60°N 112°W), WBNP is the largest national park in Canada, at 44,807km^2 (Figure 1 and Figure 2). The park was established in 1922 to protect the free-roaming wood bison (*Bison bison athabascae*) (Parks Canada, 2010). With approximately 5000 animals today, the park protects the largest and most genetically diverse population of this threatened species. Consequently, this bison population is considered integral to wood bison recovery (COSEWIC, 2011).

However, this population of bison also sustains outbreaks of anthrax and contains high rates of bovine brucellosis and bovine tuberculosis. As such, the presence disease in the bison herd limits the population to the park boundaries. A buffer exists around parts of the park, wherein any bison seen in this zone can be shot on sight due to concerns over disease transmission to disease-free cattle and bison herds nearby (Environment Canada, 2001).

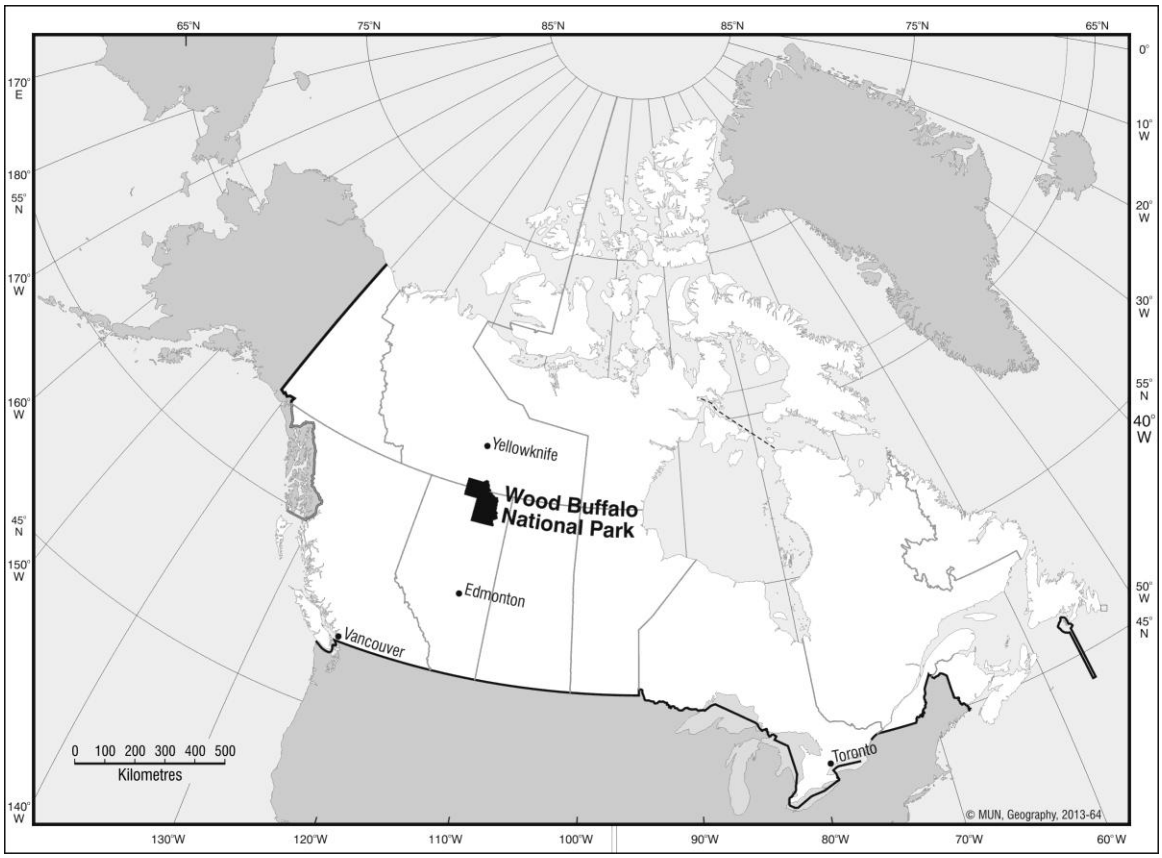

Figure 1. Map of Canada -Wood Buffalo National Park of Canada is highlighted in black. (©Memorial University Department of Geography)

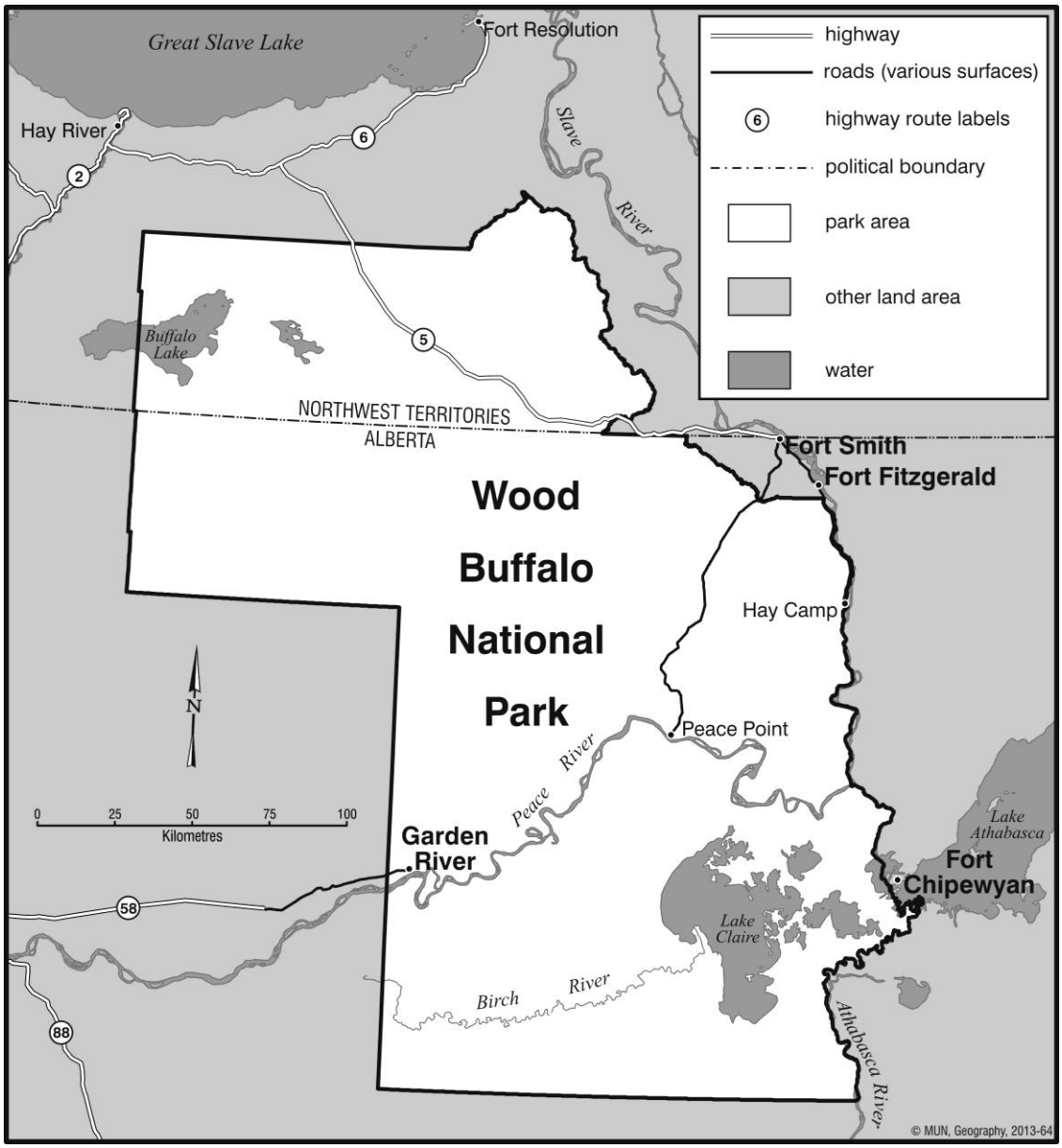

Figure 2. Map of Wood Buffalo National Park of Canada. (© Memorial University Department of Geography)

This study took place in the towns directly adjacent to the park. Originally this research was also intended to include Garden River, AB, which is the only community within the park boundary. Unfortunately, due to the risk of forest fire and evacuation during the intended field work time it was not possible to visit the town. The towns

directly adjacent to the park include Fort Chipewyan, AB at the south-east corner of the park, and Fort Fitzgerald, AB and Fort Smith, NT which are located north-east. Fort Chipewyan is a fly-in community of approximately 1200 residents. Approximately 100 percent of residents are Aboriginal, and self-identify with the Athabasca Chipewyan First Nation, Métis Local 125, or the Mikisew Cree First Nation. Fort Fitzgerald, population 20, and Fort Smith, population 2500, are within a 24 kilometre distance of one another and contain approximately 60 percent Aboriginal residents and 40 percent non-Aboriginal residents. Since the two towns are quite close, Fort Smith and Fort Fitzgerald are often referred to as one geographic area in this thesis using only the name *Fort Smith*. The three Aboriginal groups present in the region include the Fort Smith Métis Council, Salt River First Nation, and Smith's Landing First Nation.

Presently, Aboriginal people can hunt, trap, and build cabins in park boundaries according to park regulations and treaty rights. Such rights to access are uncommon in Canadian national parks created like WBNP and other southern parks were, but are typical of northern national parks established pursuant to land claim agreements. Managers of WBNP are adamant about respecting and involving local Aboriginal groups, and supported in this mandate by the 2010 Management Plan, where one priority is to "collabor(ate) with local Aboriginal groups and local communities to create a Vision Statement" (p.x) and build stronger relationships (Parks Canada, 2010). To this end, Parks Canada intends to provide interest groups with the opportunity to "actively and meaningfully participate in park management decisions" (p.x). One such form of engaging Aboriginal people is collaborating with them in park research and monitoring programs (Parks Canada, 2010). There is an interest from managers for a greater

understanding of local and Aboriginal attitudes toward the wood bison in order to make decisions which reflect more input from these interest groups. To this end, the following study was conducted in 2012 to gain an understanding of this issue.

4.0 Methods

4.1 Theoretical Concept

The objective of my research is not to prove or disprove a particular theory; rather it is to understand holistically the nature of my research subject through the interpretation of various meanings within the data (Winchester, 2005). For this purpose, I employ an inductive, *cognitive approach*; one of two overarching theoretical approaches used in human dimensions research. The cognitive approach, derived from cognitive psychology (Feist & Rosenberg, 2010), examines "values, attitudes, and norms" (Pierce, Manfredo, & Vaske, 2001, p.39-40). It is related directly to human dimensions of wildlife studies, since one of its primary theoretical approaches is cognitive (Manfredo, Vaske, & Decker, 1995). Largely concerned with attitude and value theory, the cognitive approach in human dimensions proposes that human thought is organized into a "hierarchy of cognitions" (Pierce et al., 2001, p.40). It suggests that "people's values determine their attitudes and that their attitudes, in turn, affect their behaviours" (Pierce et al., 2001, p.40).

4.2 Methods of Inquiry

Aboriginal people have been studied by outsiders for many years and in an attempt to understand Aboriginal beliefs and perceptions about the environment and

wildlife, a variety of methodological tools have been used. Increasingly popular among social scientists is the complementary use of qualitative and quantitative approaches to data collection, in what is termed *mixed methodology* (Decker et al., 2001, p.376). Selection of a particular approach, however, is entirely dependent on the objectives of the researcher.

Human dimensions research and social sciences in general, take one of three approaches to collecting data (Decker et al., 2001). Some researchers rely exclusively on qualitative methods to "capture details and nuances about individuals and groups" while others use only quantitative approaches. Still others have been choosing a mixed methodology (Decker et al., 2001, p.376). A mixed methodology is an effective route to data collection, with over 100 human dimensions studies using qualitative and quantitative research (Decker et al., 2001). Throughout my own research to date, I have found that the majority of studies that look at Aboriginal attitudes towards the environment and wildlife follow a mixed methodology.

According to Hines (1993), when looking at diverse cultural and ethnic groups, the use of both qualitative and quantitative techniques can ensure that findings are both relevant and accurate. The combination, for instance, of in-depth interviews and questionnaires, provide "both the individual and the general perspective on the issue" (Winchester & Rofe, 2010, p.17). In addition, the use of data derived from multiple methods is a way of confirming that results are indeed representative and context-based.

This human dimensions of wildlife research takes a mixed methods approach by using two methods of data collection: focus groups and questionnaires. This use of quantitative and qualitative research instruments was employed to gain a holistic view on the study topic. The qualitative method of focus groups was used to provide context and increase my personal understanding of how culture, history, and personal experience influence perceptions and to appreciate the issues and politics at hand (Flint, 2006). With six local Aboriginal groups in the study area, six focus groups took place; one for each Aboriginal group. Focus groups explored the key issues important to members of the Aboriginal groups regarding bison and their management in and around WBNP through the emergence of themes. These themes aid in understanding the views and meanings that local Aboriginal interest groups associate with bison, disease, and management.

Quantitative questionnaires were used to characterize the attitudinal landscape of these communities and subsequently generalize the data so that it is representative of the wider local populations. The research instrument consisted of 34 close-ended questions assessing, feelings toward bison; hunting; knowledge of bison population and disease; acceptability of possible bison management options; and the importance of bison in terms of food, economic, spiritual, and ceremonial use. A 5-point or 3-point Likert scale (Wein, Sabry, & Evers, 1989) was used depending on the item in the closed-ended items. One open-ended question was included for participants to add comments (Appendix 6). Demographic information collected in the questionnaire included gender, age, town of residence, whether the respondent self-identified as Aboriginal, which Aboriginal group the participant belonged to, and how many times the person had visited the park that year.

The questionnaire was reviewed and approved by members of each local Aboriginal government prior to implementation.

This mixed methods approach resulted in the collection of 337 questionnaires from Aboriginal and non-Aboriginal residents and six focus groups, one with members of each of the six Aboriginal groups, for a total of 25 participants.

5.0 Contribution to Literature & Applied Implications

This study fills a gap in Human Dimensions literature and has important applied implications. Firstly, this research fills a gap in disease-related HD literature, as HD studies on attitudes toward wildlife and disease are limited (Needham, Vaske, Manfredo, 2004; Vaske, Shelby, Needham, 2009). Secondly, it is one few HD studies exploring Aboriginal attitudes and the nature of Aboriginal and non-Aboriginal attitudes. Finally, with growing interest group involvement in wildlife management (Riley, Siemer, Decker, Carpenter, Organ, & Berchielli, 2003), this study has applied implications, since the results can be used directly to aid in decision making by WBNP managers and Aboriginal governments and improve communication with interest groups.

6.0 Summary

With a human dimensions approach, this research seeks to gain an understanding of the perspectives of local Aboriginal and non-Aboriginal people in two regions regarding bison, disease, and management options in Wood Buffalo National Park as well as related key issues important to local Aboriginal peoples. The case study presented in

this thesis examines these attitudes and beliefs using a mixed methodology in attempt to gain a holistic view on this topic.

Part I presented the background of this research, consisting of an introduction to human dimensions – placing it within the context of the discipline of geography; a brief discussion of the history of Aboriginal peoples and national parks; research goal and objectives; study area; and methods. Part II consists of two stand-alone manuscripts detailing the results of this study; the first being the quantitative manuscript and the second being the qualitative manuscript. This is followed by Part III, which offers a conclusion and a summary of key findings from the two papers along with recommendations for how decision makers may use the results from this study and how future studies could build on this research.

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PART II: Paper 1

8.0 UNDERSTANDING ABORIGINAL AND NON-ABORIGINAL BELIEFS AND ATTITUDES TOWARD WOOD BISON MANAGEMENT: A CASE STUDY OF WOOD BUFFALO NATIONAL PARK OF CANADA

Abstract

Wildlife managers in national parks are increasingly using public participatory approaches when making decisions in order to produce more publicly accepted management plans. Parks have boundaries but wildlife moves across these and can interact with the public outside of the park. Diseased infected wildlife and the potential transmission of the disease is a possible problem that can create management conflicts between the park and the public. Disease in wildlife may impact how local people feel towards the species in question, and in turn, affect their beliefs regarding appropriate management measures. A case study is presented wherein we explore the attitudes and beliefs of residents living around Wood Buffalo National Park of Canada toward wood bison (*Bison bison athabascae*) disease management. Aboriginal and non-Aboriginal people living in Fort Smith (n=237) and Fort Chipewyan (n=100), two communities adjacent to the park, were interviewed. Two main concepts: (a) normative beliefs toward bison and (b) attitudes toward potential bison management decisions are examined. The similarities/differences are compared between Aboriginal and non-Aboriginal status. The majority of participants held positive attitudes toward bison, despite the presence of

disease. Aboriginal residents ascribe more value to bison culturally and as a food source than non-Aboriginal residents, yet as a whole Aboriginal and non-Aboriginal people agree on how bison should be managed. Wildlife based diseases can be a potential conflict and understanding public attitudes and beliefs toward disease helps to better inform management decisions.

Key words: Attitudes, beliefs, bison, disease, Aboriginal, non-Aboriginal

Introduction

The Human Dimensions of Wildlife Disease Management

Scholars describe disease as "one of the great challenges of contemporary wildlife management" (Decker, Wild, Riley, Siemer, Miller, Leong, Powers, Rhyan, 2006, p. 151); disease in wildlife can affect public attitudes toward animals and test levels of acceptance amongst the public. Human values are a key component in wildlife management; therefore wildlife disease management not only involves an understanding of disease ecology, but also requires knowledge of the underlying human values and concerns regarding wildlife disease (Decker et al., 2006). It is important to understand the biology of wildlife disease in order to plan accordingly. Additionally, understanding the general public or interest group's attitudes and opinions also contributes to making management decisions (Vaske, Shelby, and Needham 2009).

As disease control and management becomes a larger problem for wildlife managers, research is needed to understand public knowledge, attitudes, beliefs, and risk

perceptions about disease and its management (Decker et al. 2006). Knowledge is limited with respect to human attitudes and beliefs regarding wildlife disease and management decisions (Decker et al., 2006). Currently human dimensions research focusing on disease is minimal and does not follow a consistent research paradigm (Vaske, Shelby, Needham, 2009). It is suggested that wildlife managers have a tendency to make their own conclusions about interest group attitudes and beliefs, making decisions which cause unnecessary conflicts (Decker et al., 2006,).

The limited diseases, which have been examined by human dimensions researchers, are chronic wasting disease and tuberculosis (Needham, Vaske, Manfredo, 2004; Vaske, Shelby, Needham, 2009). The species typically researched carrying these diseases are deer, elk, cattle, and wolves (Dorn & Mertig, 2005; Brook & McLachlan, 2006; Stronen, Brook, Paquet, & McLachlan, 2007). In Canada, particular attention has been paid to understanding farmers' concerns regarding tuberculosis in elk living in and around Riding Mountain National Park (Brook & McLachlan, 2006). They found that farmers were highly concerned about tuberculosis, both in wildlife and in cattle. Higher levels of concern were linked to higher frequencies of observations of elk on their property. Brook and McLachlan (2006) state concerns of disease transmission may affect farmers' relationship with neighbouring protected areas (Brook & McLachlan, 2006).

In the United States of America (USA), the effects of management strategies designed to mitigate transmission of brucellosis in wildlife, such as elk and bison, to cattle has been examined (Bidwell, 2010; Kauffman, Rashford, & Peck, 2012). For instance, Bidwell (2010) analyzes the political ecology and risk perception of bison affected by brucellosis in Yellowstone National Park and a controversial management

plan designed to prevent transmission to cattle through the capture and slaughter of bison crossing the park boundary into the state of Montana. This resulted in the slaughter of 20 percent of the bison population, and was followed by public protests, media coverage, and lawsuits. Bidwell (2010) concludes that the actions of government are shaped by their economic and political contexts and that resolution of this management conflict may require government to take new approaches to managing brucellosis in the park (Bidwell, 2010). This case study emphasized the importance of involving interest groups in order to discuss and identify differences in management values and acceptable management strategies (Bidwell, 2010).

Anthrax is one disease in wildlife that is primarily discussed in biology literature. There is discussion of the problems that anthrax in wildlife present, such as evidence that it remains prevalent in national parks around the world, but such articles are primarily centered on the epidemiology and control measures (Hugh-Jones & De Vos, 2002). Similarly, the literature regarding anthrax in bison is primarily limited to understanding the history and biology of the disease rather than the social/human dimensions (Dragon, Elkin, Nishi, & Ellsworth, 1999).

Unlike anthrax and brucellosis, there has been exploration of hunter's views toward management strategies regarding chronic wasting disease (CWD) (Petchnik, 2006; Vaske, Needham, Newman, Manfredo, & Petchenik, 2006; Needham, Vaske, Manfredo, 2004; Needham, Vaske, Manfredo, 2006). Testing animals for this disease has been shown to be a widely acceptable management option whereas doing nothing was unacceptable (Vaske, Shelby, & Needham, 2009). These studies have also shown it is

more acceptable for hunters to reduce herds than government staff (Vaske, Shelby, & Needham, 2009).

Parks and People

In the past, national parks in Canada were established and managed with little involvement from local residents and Aboriginal people (Dearden & Langdon, 2009). In many places residents were forcibly removed from parks; their rights to traditional livelihoods stripped away (Dearden & Langdon, 2009; MacEachern, 1997). Scholars have suggested the history of park establishment may have negatively affected Aboriginal and local residents' support for protected areas (Dearden & Langdon, 2009; MacEachern, 1997; Sandlos 2007). Even today, the creation of protected areas continues to be the "cornerstone of strategies to conserve biodiversity worldwide" (Murray & King, 2012, p.385), however, present day Aboriginal groups in Canada are more empowered than in the past and want to play, or are asking to play, an ever increasingly active role in the establishment and management of new national parks (Thomlinson & Crouch, 2012). According to Notzke (1995), Aboriginal groups "strive for participation in the management of (...) resources, and (...) they want to share in the power to make decisions about the fate of the land and the resources it supports" (p.188); a notion that is generally welcomed by government today.

Cognitive approach

Derived from social psychology, the cognitive approach examines values, attitudes, and norms which are organized into a hierarchy (Pierce, Manfredo, & Vaske, 2001). This cognitive hierarchy aids in understanding the relationship between general

values and specific attitudes / norms, and subsequently how such cognitions may influence individual and / or agency decisions. *Attitudes* refer to a person's evaluation of a concept, action, person, object, or animal (e.g. bison) as favorable or unfavorable (Pierce et al., 2001; Vaske & Manfredo, 2012). *Beliefs* are what people consider to be true, yet may actually have no bearing on fact (Vaske & Manfredo, 2012). Attitudes have been shown to forecast beliefs, and in turn, behavioral intention (Eagly & Chaiken, 1993; Fishbein & Ajzen, 2010). For the purpose of this article, behavioural intentions are indicated by the acceptability of various bison management practices (e.g. vaccinations, collaring, culling, etc.).

Study Objective, & Hypothesis

The objective of this study is to understand Aboriginal and non-Aboriginal explicit attitudes and beliefs toward wood bison, bison management options, and disease - specifically bovine tuberculosis, brucellosis, and anthrax. These issues are explored in order to understand how these attitudes can contribute to management of this animal in WBNP. They are investigated using a quantitative survey. We hypothesize that:

H_1: Aboriginal residents will ascribe more importance to bison than non-Aboriginal residents.

H_2: Aboriginal residents will be more concerned about disease issues as they relate to hunting bison than non-Aboriginal residents.

H_3: Aboriginal residents will be less supportive of killing diseased animals as a disease management tool than non-Aboriginal residents.

H_4: Aboriginal residents will be more supportive of bison management options than non-Aboriginal residents.

Methods

Study site

Bordering the Northwest Territories and northern Alberta (60°N 112°W), WBNP is a national park which was established in 1922 to protect the last free roaming herds of the threatened wood bison (*Bison bison athabascae*) in northern Canada (Strong & Gates, 2009). Containing high rates of bovine tuberculosis (49%), bovine brucellosis (31%) (while also subject to outbreaks of anthrax), it is believed that the origin of these diseases is linked to the import of 6673 plains bison (*Bison bison bison*) from Wainwright, Alberta between 1925 and 1928 (Gates et al., 2001). Despite the presence of these diseases in the bison herd, nothing limits the bison from ranging outside of the park boundaries. Protection is a complicated matter because though wood bison are formally protected on all lands under the Species at Risk Act, there is a formal control area called the Bison Control Area in the Northwest Territories, which is a buffer zone outside the northwest section of the park. Here any bison seen can be shot on sight due to concerns over disease transmission to disease-free cattle and bison herds nearby; such as those in Hay Zama and the Mackenzie Bison Sanctuary (Environment Canada, 2001).

The park works with five communities located around WBNP's border and one community located inside the park border. These communities are primarily composed of

Cree, Chipewyan, Métis, and non-Aboriginal people. There are 11 distinct Aboriginal groups interacting with the park and eight Indian Reserves within the park boundary.

Presently, Aboriginal people can hunt, trap, and build cabins within the park according to park regulations and Treaty rights. These access rights are common in northern national parks and standard in parks established pursuant to land claim agreements. With a multitude of Aboriginal interest groups and non-Aboriginal people interacting with WBNP, park managers are interested in fulfilling the requirement for consultation with Aboriginal peoples, and in this case, to gain a greater understanding of Aboriginal and non-Aboriginal attitudes toward the wood bison and how this diseased herd should be managed. The presence of disease in wildlife may impact local peoples' attitudes and beliefs toward appropriate management of the bison. Such information will be integrated into the design and implementation of the wood bison management strategy.

We explore the beliefs and values of Aboriginal and non-Aboriginal people living in communities in the WBPNC area toward wood bison disease management. Data collection occurred in 2012 in Fort Chipewyan, Fort Fitzgerald, and Fort Smith; three communities adjacent to the park. Fort Chipewyan (population: 1000), located outside the southeastern park boundary, consists almost entirely of Aboriginal residents. The Aboriginal groups in Fort Chipewyan are the Athabasca Chipewyan First Nation, Métis Local 125, and the Mikisew Cree First Nation. The second area examined in this study includes two communities located outside the northeastern park boundary – Fort Smith (population: 2400) and Fort Fitzgerald (population: 20). Since the latter has a very small population and since these towns are close in proximity, they are grouped together and

referred to hereafter as Fort Smith. There are three Aboriginal groups in the Fort Fitzgerald / Fort Smith area, which include the Fort Smith Métis Council, the Salt River First Nation, and the Smith's Landing First Nation.

Data collection

Sampling Protocol

A quantitative questionnaire administered face-to-face was selected as the tool to test the hypotheses. Data collection took place over the course of seven weeks from June through July, 2012 in Fort Chipewyan (n=100) and Fort Smith/Fort Fitzgerald (n=237). In order to increase response rates, face-to-face interviews were conducted at the place of residents (Holbrook, Green, Krosnick, 2003; Link et al., 2008). Since the populations of the towns are small, the survey was conducted using systematic random sampling at every second house on every street in each community. The researcher verbally conducted the questionnaire with participants after the objectives of the research were explained and verbal consent by the participant was given. Potential respondents were established as >18 years of age and competent enough to understand the objectives and questions related to the research. Questionnaires were conducted over four weeks in Fort Smith and over three weeks in Fort Chipewyan by the principal researcher. Depending on the level of interest of the participants, the interviews ranged from 10 to 30 minutes. The response rate was 70% (n = 337 usable questionnaires). Participant ages ranged from 18 to over 90

years. The most common reason for refusal was they knew nothing about bison and/or were not interested in this topic.

Variables

Status (i.e. Aboriginal or non-Aboriginal) was the independent variable. Attitudes and beliefs regarding feelings and the importance of bison (5 items), hunting (2 items), disease (2 items), and management (7 items), were the dependent variables analyzed.

The feeling toward bison question was: "Which best describes your feelings toward buffalo inside WBNP … 1) strongly dislike; 2) dislike; 3) neither; 4) like; and 5) strongly like". This item was measured on a 5-point rating scale from "strongly dislike (-2) to strongly like (2). The importance of bison questions asked: "how important, if at all, are bison to you?" Respondents were asked to rate the importance of bison in terms of: (a) "ceremonial use"; (b) "economic use"; "food use"; and (d) "spiritual use". Responses were measured on a 5-point rating scale ranging from "not at all important" (-2) to "very important" (2).

Two questions regarding hunting asked respondents to rate their level of agreement with the statements: "if it were possible to hunt buffalo in the park, the presence of disease would discourage me from hunting" and "if it were possible, my family or I would participate in hunting buffalo in the park". These questions were measured on a 5-point rating scale ranging from "strongly disagree" (-2) to "strongly agree" (2).

Two beliefs regarding disease questions asked whether or not respondents agreed or disagreed with the statements, “It is important to minimize the risk of disease to neighbouring cattle” and “It is important to minimize the risk of disease to neighbouring bison”. The questions were measured on a 5-point rating scale ranging from “strongly disagree” (-2) to “strongly agree” (2).

Six of the management questions asked: “How acceptable, if at all, are the following buffalo management options in the park?” The options were: (a) “vaccinations”; (b) “collaring/tagging”; (c) “reducing the herd significantly”; (d) “relocating animals”; (e) “monitoring without physical contact”; and “do nothing”. All six options were measured on a 5-point scale: “not at all acceptable” (-2), “slightly unacceptable” (-1), “neither acceptable nor unacceptable” (0), “slightly acceptable” (1), and “completely acceptable” (2). One management option question asked whether or not respondents agreed or disagreed with the statement “I would support destroying the entire WBNP herd if tuberculosis or brucellosis were transmitted to uninfected buffalo herds”. The same rating scale as the previous questions was used, ranging from “strongly disagree” (-2) to “strongly agree” (2).

Analysis

Results were analyzed using descriptive statistics with the Statistical Package for the Social Sciences (SPSS V. 20) for a select number of survey questions. To explore differences between respondent groups, an independent t-test was performed on the group of key questions selected using a significance level of $p < 0.05$ (Vaske, 2008). A one-way

analysis of variance (ANOVA), which included the Pearson chi-square test for independence with four degrees of freedom, compared residence, status, and Aboriginal residency for each of the 16 items (Vaske, 2008). Prior to combining the Aboriginal participants from Fort Smith and Fort Chipewyan into a single group, the two Aboriginal groups were tested to see if they differed significantly across all dependent variables. No significant differences were found; therefore the Aboriginal participants in both towns were grouped together for analysis.

Results

On average, wood bison in WBNP are liked and supported by both Aboriginal and non-Aboriginal residents. When asked how they feel (Table 1) about the bison in WBNP, both Aboriginal (AB) and non-Aboriginal (NA) like bison (AB: M = 1.16; NA: M =1.49; p<.001) but the mean responses are significantly different, with non-Aboriginal residents liking bison in WBNP more. There are also significant differences (p< .001) between these groups when asked how important bison are for ceremonial (AB: M = .04; NA: M = -1.04), economic (AB: M = .08; NA: M = -.62), food (AB: M = .64; NA: M = .00), and spiritual (AB: M = .31; NA: M = -.72) uses, with Aboriginal residents on average ascribing more importance to bison for these four uses than non-Aboriginal respondents. This is likely attributed to the heritage of local Aboriginal peoples on the landscape and a history of subsisting on bison.

Table 1.

The results of independent t-test between the dependent variable, feelings and importance of and the independent variable, Aboriginal or Non-Aboriginal

Survey Item	Aboriginal (M)	Non-Aboriginal (M)	*t*-value	*p*-value	Eta (η)
Which best describes your feelings toward buffalo inside WBNP?[1]	1.16	1.49	-3.535	p<0.001	.190
How important are buffalo to you for…[2]					
… Ceremonial use?	.04	-1.04	7.400 [a]	p<0.001	.347
… Economic use?	.08	-.62	4.560	p<0.001	.242
… Food use?	.64	.00	4.019	p<0.001	.215
… Spiritual use?	.31	-.72	6.490 [a]	p<0.001	.324

[1] Variables coded on a 5-point scale from -2 "strongly dislike" to +2 "strongly like."

[2] Variables coded on a 5-point scale from -2 "not at all important" to +2 "very important."

[a] Equal variance could not be assumed based on Levene's test for Equality of Variance.

In comparing Aboriginal and non-Aboriginal responses, results show that, on average, Aboriginal peoples would hunt bison in the park, but non-Aboriginal respondents would not (Table 2). Significant differences were found between these groups (p<.05), with the average Aboriginal respondent (M = .24) agreeing and the non-Aboriginal respondents disagreeing (M = -.15). Interestingly, the majority of Aboriginal residents stipulate that the presence of disease would discourage them from hunting bison in the park, whereas most non-Aboriginal respondents say that it would not. There was a significant difference between the two groups (p< .05), with Aboriginal respondents

agreeing that they would be discouraged from hunting (M = .29) and non-Aboriginal respondents disagreeing (M = -.06). Many non-Aboriginal residents remarked to the primary researcher that they answered in this fashion because they would not hunt bison in the first place, therefore they would not feel discouraged.

Table 2.

The results of independent t-test between the dependent variable, hunting, and the independent variable, Aboriginal or Non-Aboriginal

Survey Item	Aboriginal (M)	Non-Aboriginal (M)	*t*-value	*p* value	Eta (η)
If it were possible to hunt buffalo in the park, the presence of disease would discourage me or my family from hunting. [1]	.29	-.06	2.806 [a]	.005	.145
If it were possible, my family or I would participate in hunting buffalo in the park. [1]	.24	-.15	2.705	.007	.146

[1] Variables coded on a 5-point scale from -2 "strongly disagree" to +2 "strongly agree."

[a] Equal variance could not be assumed based on Levene's test for Equality of Variance.

In terms of disease, both groups want to minimize the risk of disease transmission from the park to cattle and disease-free bison herds. Among the two groups, no significant differences ($p>.05$) are found when asked about the importance of minimizing the risk of disease to neighbouring cattle or buffalo populations (Table 3). On average, Aboriginal (M = .82) and non-Aboriginal (M = .95) respondents both agree that minimizing the risk

of disease to cattle is important. Likewise, they agree that minimizing the risk of disease to neighbouring buffalo herds is also important (AB: M = 1.00; NA: M = 1.13).

Table 3.

The results of independent t-test between the dependent variable, disease, and the independent variable, Aboriginal or Non-Aboriginal

Survey Item	Aboriginal (M)	Non-Aboriginal (M)	*t*-value	*p*-value	Eta (η)
It is important to minimize the risk of disease to neighbouring cattle. [1]	.82	.95	-1.215	.225	.066
It is important to minimize the risk of disease to neighbouring buffalo populations. [1]	1.00	1.13	-1.529	.127	.083

[1] Variables coded on a 5-point scale from -2 "strongly disagree" to +2 "strongly agree."

[a] Equal variance could not be assumed based on Levene's test for Equality of Variance.

Most fascinating is that despite cultural differences, there is agreement on which bison management options are acceptable and unacceptable. Although both respondent groups want to minimize the risk of disease transmission from the park to cattle and other bison herds, they stipulate that this cannot be at the cost of destroying the entire WBNP herd. Both groups disagree with destroying the entire park bison herd as a management option if tuberculosis or brucellosis were transmitted to uninfected buffalo herds (Table 4). There is a significant difference between Aboriginal (M = -.42) and non-Aboriginal (M = -.73; $p<.05$) responses, with non-Aboriginal respondents disagreeing more strongly.

Similarly, actions such as significantly reducing (AB: M = -.73; NA: M = -.72; $p>.05$) or relocating park bison herds (AB: M = -.27; NA: M = -.37; $p>.05$) are on average seen as unacceptable by both groups. Likewise, doing nothing to manage wood bison in the park is largely unacceptable (AB: M = -.46; NA: M = -.87; $p<.05$).

Both groups on average are also of the same opinion that vaccinating, collaring/tagging, and monitoring bison without physical contact are appropriate actions. On the acceptability of vaccinations as a method of bison management, both groups (AB: M = .91; NA: M = .91; $p>.05$) support this type of management action. They also view collaring/tagging (AB: M = .71; NA: M = 1.16), and monitoring without physical contact (AB: M = .90; NA: M = 1.26) as acceptable, with significant differences found between groups for these questions ($p< .05$). Relative acceptability differed, with Aboriginal respondents showing a lower rate of acceptability for these management options than non-Aboriginal participants.

Table 4.

The results of independent t-test between the dependent variable, bison management and the independent variable, Aboriginal or Non-Aboriginal

Survey Item	Aboriginal (M)	Non-Aboriginal (M)	*t*-value	*p* value	Eta (η)
I would support destroying the entire WBNP herd if tuberculosis or brucellosis were transmitted to the uninfected buffalo herds.	-.42	-.73	2.491 [a]	.013	.131
How acceptable, if at all, are the following buffalo management options in the park? [2]					
… Vaccinations	.91	.91	.022	.982	.001
… Collaring/Tagging	.71	1.16	-3.109 [a]	.002	.153
… Reducing the herd significantly	-.73	-.72	-.092	.927	.005
… Relocating animals	-.27	-.37	.559	.577	.031
… Monitoring without physical contact	.90	1.26	-2.521	.012	.137
… Do nothing	-.46	-.87	2.60 [a]	.010	.133

[1] Variables coded on a 5-point scale from -2 "strongly disagree" to +2 "strongly agree."

[2] Variables coded on a 5-point scale from -2 "not at all acceptable" to +2 "completely acceptable."

[a] Equal variance could not be assumed based on Levene's test for Equality of Variance.

Discussion

Successful wildlife management incorporates both biological and human factors influencing a species' survival. The objective of this study has been to focus on the explicit attitudes and beliefs of Aboriginal and non-Aboriginal residents in communities adjacent to WBNP toward wood bison, bison management options, and disease. These issues have been explored to understand how local attitudes and beliefs can contribute to management of this animal in WBNP.

The findings from this study support two of the four hypotheses presented. First, the study shows that there is a cultural difference in how bison are valued, with Aboriginal residents ascribing more importance to bison than non-Aboriginal residents (H_1). Second, Aboriginal residents are more concerned about disease issues as they relate to hunting bison than non-Aboriginal residents (H_2). The third (H_3) and fourth hypotheses (H_4) are not supported by the findings, yet point to some interesting findings. First, both Aboriginal and non-Aboriginal residents find killing diseased bison as a management tool unacceptable; with no significant difference found between the groups. Second, Aboriginal and non-Aboriginal groups agree on which management options are acceptable and unacceptable; again with no significant difference found in the analysis.

Academic Implications

This study is a valuable contribution to the Human Dimensions discipline and wider academic literature for several reasons. Firstly, it is one of the few HD studies focusing on Aboriginal attitudes toward wildlife and disease and the nature of Aboriginal

and non-Aboriginal attitudes. While HD techniques are used to engage the non-Aboriginal population, these methods of public involvement have had less application to Aboriginal interest groups. In general, social science work with Aboriginal groups on natural resource management issues has conventionally employed qualitative techniques focused on extensive listening to the stories and traditional ecological knowledge (TEK) of individuals. These are subsequently incorporated into discussions when management decisions are needed to be made. Asking about attitudes and opinions toward supporting or opposing management options about wildlife has not really been addressed quantitatively within Aboriginal populations, partly due to a history of methodological approaches and social science disciplines that have felt that TEK and attitudes or perceptions of risk are so interconnected that they are inseparable and that quantitative techniques do not adequately present TEK perspectives. Though that may be the case, this study demonstrates that quantitative techniques can have a place in broadly representing the perspectives of large populations of Aboriginal interest groups on particular questions. Quantitative research does not undermine the value of qualitative approaches, which often provide deeper contexts. We made it clear to participants that our study focused on attitudes and beliefs about bison and their management as such information was required to help park managers understand preferences for management options.

This study also contributes to HD research on human attitudes toward wildlife diseases, which is important (Decker et al., 2006) yet limited (Needham, Vaske, Manfredo, 2004; Vaske, Shelby, Needham, 2009). Therefore this research contributes to filling a gap in disease-related HD research. Results from this study are similar to results

found in the literature regarding wildlife disease management; such as the need to minimize disease transmission and disapproval of a 'do nothing' approach (Petchenik, 2006; Vaske, Shelby, & Needham, 2009).

Applied Implications

Integrating people into wildlife management decision-making in a meaningful, transparent, efficient and effective way remains an ongoing challenge for wildlife and park managers. Past relationships, or lack thereof, in working with Aboriginal groups, especially in Canadian national park settings, has continually hampered meaningful involvement and dialogue that truly brings representative data on the views and positions of Aboriginal groups into decision-making processes. This research is not only academically significant, but also has important applied implications. For instance, the literature has suggested that wildlife managers have a tendency to make their own conclusions about interest group attitudes; conclusions that often lead to decisions that cause unnecessary collateral outcomes (Decker et al., 2006). Interest group involvement has become an essential component in wildlife management (Riley, Siemer, Decker, Carpenter, Organ, & Berchielli, 2003), and in response communities and agencies have experimented with various techniques (Chase, Schusler, & Decker, 2000). For instance, in the Canadian north, concern for wildlife health has led to community, government, and academic scientists collaborating to form Aboriginal community-based wildlife monitoring programs (Brook & McLachlan, 2005; Brook, Kutz, Veitch, Popko, Elkin, Guthrie, 2009). The results described in this research align with this movement, as it

demonstrates that Aboriginal peoples around WBNP view research and monitoring as appropriate measures toward preventing disease transmission.

In accordance with the literature regarding the importance of working with communities to achieve conservation goals (Hill, 2009), this research can be used directly by WBNP managers and local Aboriginal governments as an early step to incorporating public opinion into decision making and improving education and communication needs. While fear of disease in wildlife can have potential impacts on the use of the wildlife (e.g., hunting), managers should find comfort in understanding that Aboriginal and non-Aboriginal residents share similar concerns for bison and continue to oppose the elimination of the herd simply because it carries disease. However, it should be noted that these are the opinions of Aboriginal and non-Aboriginal residents living together in towns adjacent to a national park; views may differ in communities further afield, and those with a strong agricultural focus.

It has been shown that understanding the acceptability of management actions promotes the incorporation of public opinion into decision making, and subsequently having interest group support assists in the success of wildlife disease management (Vaske, Shelby, Needham, 2009). This research contributes to developing approaches that reduce risks presented by bison diseases, such as public engagement on wildlife diseases present and risks of infection; governing body goals and policies; and disease management plans. Human dimensions studies like this one provides knowledge to support further collaboration between park managers, local Aboriginal governments, and

non-Aboriginal local people, while aiding in informed decision-making regarding the future of this threatened species.

Future Research

Throughout this study the attitudes and beliefs of people toward bison, disease and management are explored using quantitative research tools. The results indicate that Aboriginal peoples assign more value to bison for cultural, economic, spiritual, and food uses than non-Aboriginal respondents. There is also an indication that they would like the ability to hunt bison in the park. The historical and present value of bison to local Aboriginal peoples in the region and the feasibility of park bison hunt could be further explored in future research.

The scope of this study is limited to two regions and six Aboriginal groups. The park has eight Aboriginal Reserves within its boundary and works with five communities in the area which consist of eleven distinct Aboriginal groups. It is recommended that similar research be conducted with the other five Aboriginal groups that exist in and around the park: the Deninu'K'Ue First Nation, Fort Resolution Métis Council, K'atl'odeeche First Nation, Hay River Métis Council, and the Little Red River Cree First Nation. It would be beneficial to understand and include these other groups and communities in similar studies of attitudes and beliefs toward bison and disease in WBNP to get a complete sense of what local people think of bison and possible management

options. It could also be beneficial to understand what the perspectives are of Aboriginal, provincial, and territorial governments toward the various bison management options.

The majority of respondents indicate that they would prefer bison and cattle populations outside the park to be protected from disease transmission, yet they also specify that this cannot be at the cost of destroying the park herd. An important comparison would be to understand what the perspectives are of people in other communities with cattle or other bison populations that are somewhat close to the park, such as ranchers.

Although this study did not explore TEK, future researchers could examine Aboriginal hunters' traditional knowledge about wildlife disease recognition and even discuss the similarities and differences with western science beliefs about wildlife diseases. An effort could also be made to understand the traditional importance of bison among the various Aboriginal groups.

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PART II: Paper 2

9.0 Fostering Relationships: Aboriginal Peoples, Bison, and Wood Buffalo National Park of Canada

Abstract

This study explores key issues important to members of the Aboriginal groups in Fort Chipewyan, AB and Fort Smith, NT regarding wood bison (*Bison bison athabascae*) and their management in and around Wood Buffalo National Park. Six semi-structured focus group interviews were conducted over the course of two months in the summer of 2012 with members of the six local Aboriginal groups. The resulting themes aid in a broad understanding of the views and meanings that the local Aboriginal groups attribute to bison, disease, and management. One overarching theme offers insight on Aboriginal feelings and knowledge regarding bison, disease and management. The second theme draws attention to long lasting issues of lack of trust and poor communication between the federal government represented by Parks Canada and Aboriginal groups. Based on the results of this research as well as the literature regarding the importance of working with communities to achieve conservation goals, it is recommended that WBNP consider exploring transactional or co-management approaches in future decision-making processes regarding wood bison – resulting in a two-way exchange of ideas to achieve a more collaborative relationship with Aboriginal groups in the future.

Introduction

> The buffalo have been around here for time immemorial. (...) They've been around for thousands of years and Europeans came to this country and they exterminated them. There used to be sixty million, eighty million buffalo around here at one time. They exterminated all eighty million buffalo (...). The government allowed it. (...) By 1870 the buffalo were on the verge of extinction until a few people, concerned citizens came up and put a stop to that. Today it's still... a low count yet. There's not as many buffalo as there used to be. So that's why Wood Buffalo National Park was established in 1922. For that purpose. And they brought ten thousand or six thousand buffalo from Wainwright (...) in 1922 up to Wood Buffalo National Park. Towards Hay Camp there – there's a buffalo crossing. They let the buffalo out there from the barges. My late father and some other elders said the buffalo were all packed together there like sardines standing up there and some of them were dead. They were dead already; it was so packed up, just packed together in the barges. A lot of them died. They let them go there into the Wood Buffalo National Park. I got that oral history from an elder. My late father said that it was true, that six thousand heads from Wainwright ... prairie buffalos – slightly smaller but integrated with or interbred with wood buffalo, eh. That why they look... They're pretty huge now, eh. They're all big, eh. But that was the main purpose Wood Buffalo Park was established that time. So buffalo is a very sacred animal. Still is today. We used it for food... So it's both ways: spirituality and our own use. First Nations have been dependent on buffalo for as far as I can remember. - *Smith's Landing First Nation member, July 2012*

As home to the largest free-roaming herd of wood bison (*Bison bison athabascae*), Wood Buffalo National Park of Canada (WBNP) represents an area of special biological significance, but is also culturally unique. With eleven distinct Aboriginal groups who claim traditional use of the land, and increasing national concern over Aboriginal rights in protected areas in Canada (Dearden, 2009), WBNP, like other national parks in Canada, is beginning to change its historical trajectory of little or no consultation with Aboriginal communities (Sandlos, 2014) to becoming more inclusive of its Aboriginal neighbors.

WBNP was established in 1922 to protect the largest free-roaming population of wood bison (*Bison bison athabascae*) in the world. Between 1925 and 1928, 6673 plains bison (*Bison bison bison*) were imported to WBNP from Wainright Alberta; an act that is also believed to have introduced disease to the local bison population (Gates et al., 2001).

Today the bison population stands at approximately 5000 animals (Parks Canada, 2010) and contains high rates of bovine tuberculosis (49%), bovine brucellosis (31%), and is also subject to outbreaks of anthrax (Gates et al., 2001). The Mackenzie Bison Sanctuary in the Northwest Territories and the Hay-Zama herd in Alberta are wood bison herds closest to the park that are classified as free from tuberculosis and brucellosis, and were established to reintroduce "healthy" wood bison to the landscape (Alberta Government, 2012, p.2; Government of the Northwest Territories, 2010). Despite wood bison being listed as 'threatened' in the federal Species at Risk Act (Government of Canada, 2002), a buffer zone called the Bison Control Area exists south of the Mackenzie River wherein bison seen in the zone are destroyed if detected outside their designated areas to prevent disease transmission to disease-free cattle and bison herds (Alberta Government, 2012; Government of the Northwest Territories, 2010; Environment Canada, 2001).

Traditionally a food source for the local Aboriginal peoples as clearly articulated in the opening quotation, bison (also known locally as *buffalo*) hunting has been prohibited by northern wildlife legislation in various ways since 1894, and was made illegal when the park was created. With high rates of disease, there has been renewed discussion about bison management and perceptions of diseases carried by bison; prompting Parks Canada to actively engage Aboriginal groups about their views on what, if anything should be done to manage disease in bison in WBNP. Management alternatives that might exist differ drastically and include a do nothing approach, collaring or tagging animals, vaccination programs, relocating animals, identifying and culling sick animals, and elimination of the entire WBNP bison population.

Objective & Argument

The objective of this study is to explore key issues important to members of the Aboriginal groups in Fort Chipewyan and the Fort Smith area (including the small town of Fort Fitzgerald) regarding bison and their management in and around WBNP through the emergence of themes. The results are divided into themes that aid in a broad understanding of the views and meanings that the local Aboriginal groups attribute to bison, disease, and management. These focus groups have produced a very rich set of data, not all of which can be discussed in this paper. This paper specifically focuses on two overarching themes that emerged from the interviews. The first theme builds on the quantitative chapter by offering a deeper understanding of Aboriginal feelings and knowledge regarding bison, disease and management. The second theme draws attention to long lasting issues of lack of trust and poor communication between government represented by Parks Canada and Aboriginal groups.

It is argued that (i) trust issues and behavioural conflicts must be resolved between Parks Canada and Aboriginal peoples before addressing other issues; (ii) the relationship between Aboriginal peoples and WBNP management could be improved if Aboriginal peoples were able to contribute meaningfully to bison management in the future through transactional or co-management approaches and local people were regularly updated on park news; and (iii) access to some bison hunting in the park might allow Aboriginal peoples to make meaningful connections between place (WBNP) and their cultural practices.

Background

Research Context

The majority of parks are "surrounded by human populations that interact in some way with the protected area" and differences occur in how local people and park agencies "view nature and the purpose of protected areas" (Schelhas, J. & Pfeffer, M.J., 2005, p.388). Research has shown that interest group input into decisions regarding wildlife management is crucial to successfully implementing wildlife management decisions (Decker & Chase, 1997; Leong, Decker, Lauber, Raik, & Siemer, 2009). According to Decker and Chase (1997), interest groups are more likely to "consider a (...) problem solved acceptably when they have had a voice in the decision-making process" (Decker & Chase, 1997, p.789). According to Osherenko (1988), relationships must be established and maintained between Aboriginal groups and government agencies because:

> "neither the indigenous system nor the state system alone can protect northern wildlife and ecosystems, much less generate efficient and equitable wildlife management. Government agencies cannot implement and enforce their regulations without Native co-operation. Natives cannot protect the resources nor guarantee access to those resources without cooperation of government agencies" (Osherenko, 1988, p.102).

Decker and Chase (Decker & Chase, 1997; Decker & Chase, 2001) use the following typology in analyzing general levels of interest group involvement (Figure 3).

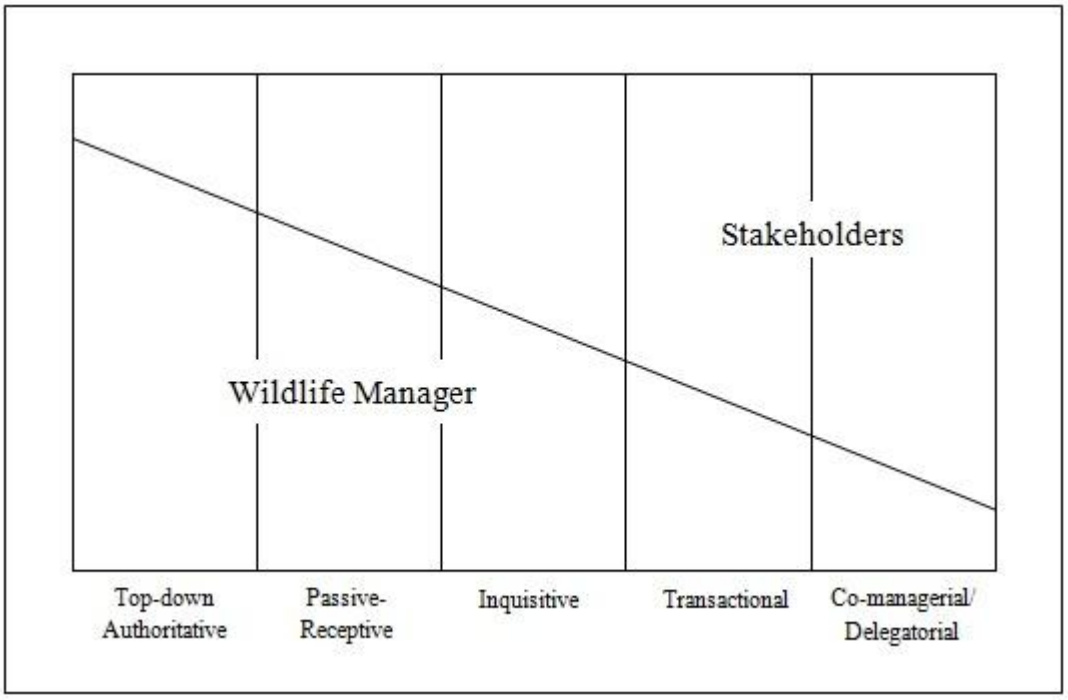

Figure 3. Stakeholder influence on wildlife management decisions using different management approaches. *(Adapted from Decker & Chase, 2001, p.135)*

The *authoritative* approach occurs when management agencies make all decisions without consulting interest groups. When agencies do not actively seek interest group input, but do take it into consideration when the initiative is taken by the interest groups to make themselves heard, this is known as the *passive-receptive* approach. When management agencies invite input from interest groups, it is termed the *inquisitive* approach (Chase, Schusler, & Decker, 2000).

When wildlife managers are dealing with complex issues with many interest groups, the top down approaches may not be acceptable. In order to truly understand interest group attitudes, the levels of acceptability of various management alternatives, and solve complex people-wildlife challenges, managers "have discovered that they need

to get out of the middle" (Decker & Chase, 1997, p.791). According to Chase, Schusler, and Decker (2000), the adoption of a transactional approach or a co-management approach "marks a significant shift in the way agencies interact with stakeholders" because interest groups are no longer "merely supplying input", they are participating in decision-making (Chase, Schusler, & Decker, p.210, 2000). Initiated by managers, transactional approaches involve interest groups articulating their points to one another rather than through intermediaries or the managers. Consensus about management actions is then achieved through education and discussion (Decker & Chase, 1997; Nelson, 1992).

Though there is no single model for co-management, it differs from the transactional approach by involving interest groups "in multiple stages of the management process" rather than only in decision-making (Chase, Schusler, & Decker, p.211, 2000). Co-management is familiar to many of Canada's northern peoples, as well as national and territorial governments, and regulatory authorities under land claims (Grimwood & Doubleday, 2013). According to Borrini-Feyerabend et al. (2000), co-management (also called joint, participatory, collaborative, or multi-party management) of natural resources is "a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources" (Borrini-Feyerabend et al., p.1, 2000). This requires a re-examination of the role of wildlife agencies "as well as the acceptance by local communities for greater responsibility in solving local wildlife problems" (Decker & Chase, 1997). A co-management approach can "offer a socially and environmentally appropriate means of

increasing local participation in resource decision making" (Castro & Nielson, 2001) and "offers paradigmatic benefits enabling cooperation" (Grimwood & Doubleday, p.15, 2013; Plummer & FitzGibbon, 2007).

Traditional Ecological Knowledge (TEK) has been well documented to aid in sustainable resource management and to empower Aboriginal peoples in environmental decision making (Menzies & Butler, 2006; Ellis, 2005; Houde, 2007). TEK is a "collective body of knowledge, experience and values held by societies with a history of subsistence" (Ellis, 2005, p.66), and is "developed through experience, observation, trial-and-error experiments, and the oral tradition" (Karjala, Sherry, Dewhurst, 2004, p.95-96). Based on the regional or local scale, TEK consists of "a detailed understanding of the environment, customary authority, and communal management principles" (Karjala, Sherry, Dewhurst, 2004, p.95-96). TEK has been considered in various types of decision-making processes, such as treaty entitlement and land-claims (Houde, 2007), land-use regulation (Duerden & Kuhn, 1998), environmental assessments (Usher, 2000), wildlife management (Sandlos, 2014), and is fundamental to co-management strategies (Houde, 2007). However, fear of possible misrepresentation caused by sharing this valuable knowledge can make Aboriginal groups hesitant to share it (Brook & McLachlan, 2008; Canadian Institute of Health Research, 2007; Stevenson, 1996). When engaging Aboriginal peoples to understand attitudes toward a species and management options, knowledge transmission is not always necessary. According to Houde (2007), TEK is often used to improve biophysical scientific information.

Using a human dimensions approach, the goal of this study is to understand Aboriginal residents' attitudes toward bison, disease, and management. Attitudes are

defined in this context as a person's favourable or unfavourable evaluation of a person or agency (i.e., Parks Canada), an object (i.e., bison), concept (i.e., disease) or action (i.e. management approach) (Decker, Riley and Seimer 2012). Although these attitudes may be informed by TEK, the focus is to understand the attitudes alone; not to collect TEK. Work in the field of human dimensions has been used to engage Aboriginal peoples, however, "little is known about human beliefs, attitudes, and risk perceptions with respect to wildlife disease or management of disease" (Decker et al., 2006, p. 157), especially from an Aboriginal perspective. According to Decker et al. (2006), wildlife managers tend to make their own conclusions about attitudes of interest groups which leads them to make decisions that cause unnecessary negative consequences (Decker et al., 2006).

Parks & Aboriginal Peoples

The establishment of national parks has been a popular strategy in conservation efforts ever since the establishment of the world's first national park, Yellowstone, in 1872 (Dearden & Langdon, 2009; McAllister, 1999). Since then, according to a United Nations report by Chape, Blyth, Fish, and Spalding (2003), approximately 3,881 national parks have been created worldwide, covering a total area of 1,015,512 km^2 and protected areas represent 12 percent of the global land surface (Chape et al. 2003; Dearden, 2009) . It has been well-established in parks and protected area literature that protected areas are not autonomous, isolated regions; rather they are deeply connected to their surrounding regions (Garratt, 1984; Hough, 1988; Janzen, 1983; McCleave, 2006; Zube, 1990). According to Schelhas and Pfeffer (2005), the majority of national parks are "surrounded by human populations that interact in some way with the protected area" (p.388).

Tensions often exist between local people and parks "due to historical uses of park resources by local people and differences in the way park managers and local people view nature and the purpose of protected areas" (Schelhas & Pfeffer, 2005, p.388). Among other issues, a handful of problems in developed countries such as Canada include a lack of trust (Bissix *et al.*, 1998; McCleave, Booth, & Espiner, 2004; McCleave, 2006), poor collaboration, and inadequate communication between parks and local communities (McCleave, 2006; Danby, 2002; Parks Canada, 2000; Beresford and Phillips, 2000).

Many national parks have been created on traditional Indigenous land. In Canada, the first national park, Banff, was established in 1885 - shortly after the Nakoda (Stoney) and the Siksika (Blackfoot) relinquished a large portion of southwestern Alberta to the federal government (Dearden & Langdon, 2009). According to the treaty, these groups would be allowed to continue their traditional uses of the land, however, the Crown did not include Banff in this arrangement, and the park became the pleasuring grounds for the middle and upper classes (Dearden & Langdon, 2009; Morrison, 1995; Sandlos, 2008). Likewise, many early parks in Canada (prior to the 1982 Constitution Act) were established with little to no consultation with the Aboriginal peoples who considered those regions home (Dearden & Langdon, 2009).

Early "policies for wildlife across Canada were (...) mostly at odds with Aboriginal and treaty rights" (McCormack, 2010, p.245). In fact, throughout the history of the national parks service, Aboriginal peoples have been forcibly removed from their territory (Sandlos, 2014; Sandlos, 2008). Prior to 1936, during the term of the first commissioner of the Dominion Parks Branch, James B. Harkin, national parks began to be established on lands beyond federal ownership. This approach consisted of

expropriating local non-Aboriginal landowners, such as those in Cape Breton Highlands and Terra Nova, and removing Aboriginal peoples, such as those in the Georgian Bay Islands and Riding Mountain (McNamee, 2010; MacEachern, 2001). Similar displacements of Aboriginal residents and restrictions occurred in WBNP (Sandlos, 2007). Consequently, these actions "fostered negative relationships between the parks and the communities for years, sometimes generations (McNamee, 2010, p.143).

Reflecting on the general history of the wilderness park movement in the United States and Canada, various motivations are suggested for why governments chose to expel Indigenous peoples from these areas during the 19th and early 20th centuries. Some scholars suggest that colonial ideas of 'wilderness' as "unspoiled nature outside of human influence" (Haila, 1997, p.129) became tied to the idea of the sublime and frontierism that fostered a national identity in the United States in the early 20th century (Cronon, 1995). Conversely, others argue that Aboriginal peoples were excluded from national parks in Canada and the United States "not to ensure that national parks became uninhabited wilderness", but for the purposes of "game conservation, sport hunting, tourism, and Indian assimilation" (Binnema & Niemi, 2006, p.724). According to Sandlos (2014), the expulsion of Aboriginal peoples from national parks is "one chapter in a long international history of local displacement due to the implementation of parks and nature preserves" (p.193).

Today there are "signs of change" in the Parks Canada Agency (Thomlinson & Crouch, 2012, p.69), as seen in many of the recently-established national parks such as Ivvavik, Gwaii Haanas, and the Torngat Mountains (Thomlinson & Crouch, 2012; McNamee, 2010). Public outcries by local communities and Aboriginal groups eventually

forced Parks Canada to amend its policies to prohibit expropriation when establishing or expanding national parks (McNamee, 2010). Since the 1982 Constitution Act, which is "entrench(ed) in Aboriginal and treaty rights" (Dearden & Langdon, 2009, p.374), most national parks that have been created "have working relationships with Aboriginal people" (Dearden & Langdon, 2009, p.374). A duty to consult Aboriginal peoples was determined by the 2004 Supreme Court of Canada ruling in the *Haida* and *Taku River*. This landmark decision stated that "government has a legal duty to consult with an Aboriginal group where it has real or constructive knowledge of the potential existence of Aboriginal right or title, which are claimed but unproven" (Parks Canada, 2011, p.6). In fact, not only are parks "increasingly managed in collaboration with Aboriginal people" (McNamee, 2010, p.142), but "First Nations have emerged as the dominant force influencing the establishment of national parks in Canada" (Dearden & Langdon, 2009, p.374).

Gaining community perspectives

The majority of the peoples living in and around WBNP are of Aboriginal descent (Government of the Northwest Territories, 2011; Parks Canada, 2010). Eleven distinct Aboriginal groups exist in and around WBNP and eight Indian Reserves are within the park boundary (Parks Canada, 2010). The Aboriginal groups of the Fort Fitzgerald / Fort Smith area are comprised of peoples of the Fort Smith Métis Council, the Salt River First Nation, and the Smith's Landing First Nation. Three Aboriginal groups also exist in Fort Chipewyan: the Athabasca Chipewyan First Nation, the Métis Local 125, and the Mikisew Cree First Nation. For years, the area that the park now occupies was important

hunting territory for Aboriginal groups who depended on hunting, trapping, and fishing for survival; activities that made up the very social fabric of their cultures (Lothian, 1976; Dearden & Langdon, 2009; Sandlos, 2007).

Legal protection of the wood bison started in 1894 through the *Unorganized Territories Game Protection Act* (Brower, 2008) to "protect a critically low" number of the species by prohibiting the hunting of wood bison (Carbyn, Oosenbrug, & Anions, 1993). According to Carbyn et al. (1993), this marked the "first legislated intervention into the lives of the native people" (p.12), however it was not until park establishment in 1922 that enforced protection began (Carbyn, Oosenbrug, & Anions, 1993). At the time of the park's establishment, Aboriginal peoples living in the park were forcibly removed and relocated elsewhere but continued hunting and trapping other wildlife under permit (Sandlos 2007; Dearden & Langdon, 2009). Over 6600 plains bison (*Bison bison bison*) were transferred from Wainright Alberta to WBNP in 1925-1928 due to overcrowded conditions in the south (Carbyn, Oosenbrug, & Anions, 1993). Consequently, the two types of bison interbred and the bison population increased substantially. Shortly thereafter the decision was made to carry out bison slaughters; a practice that continued for 40 years until 1974 for the purposes of commercial bison meat, predator control, and bovine disease management (Carbyn, Oosenbrug, & Anions, 1993; Sandlos, 2007).

In 1926 the regulations respecting game in Dominion Parks were amended to apply to WBNP, stating that Treaty Indians and any other persons who had previously hunted and trapped in the park could be issued permits to continue, subject to regulations. In 1949 further changes to game regulations occurred, but access continued to be limited to persons and families who had access under the above conditions (Dearden & Langdon,

2009; McCormack, 2010; Sandlos, 2007). However, these hunting and trapping privileges were not enough to sustain their livelihoods and did not permit them access to bison (Sandlos, 2007). It was not until 2005 that Treaty No. 8 rights in the park were acknowledged and that Treaty No. 8 holders could hunt in the park (Mikisew Cree First Nation v. Canada, 2005). According to Sandlos (2007), the politics regarding the establishment of WBNP contributed to an "atmosphere of distrust between local people and state officials" (p.61), with local peoples protesting that this "alien system of game laws" (p.77) restricted their inherent cultural rights and material well-beings.

Significant changes have been made in recent years in terms of improving relationships between WBNP and local Aboriginal peoples, such as the establishment of a Wildlife Advisory Board which involves Aboriginal peoples in the management of traditional hunting grounds in the park (Government of Canada, 2000). Despite this, the federal government still retains full power to regulate wildlife harvests in the park and have retained the closed season on buffalo. As previously stated, bison detected roaming outside of the park can be shot on sight due to concerns over disease transmission to commercial cattle and disease free wood bison herds. The aim of this study is to understand the themes that emerge when local Aboriginal peoples discuss bison, disease, hunting, and park management.

Methods

The focus group is a form of qualitative data collection, and is defined as "organized events in which researchers select and assemble groups of individuals to discuss and comment on, from personal experience, topics of relevance to different

research projects" (Bosco & Herman, 2010, p.194). This group interview is especially known as a method used to examine various perspectives about a particular issue through the dialogue of a group's interaction (Conradson, 2005), unearthing a rich array of insights that may not be revealed otherwise (Morgan, 1997). Although the researcher plays a role in focusing the discussion (Cameron, 2005), these dynamic conversations among participants of the study "shift power relations between researchers and those being researched" (Bosco & Herman, 2010, p.194). In so doing, focus groups are used to "promote self-disclosure among participants" and to foster an atmosphere of trust with the aim of understanding how respondents truly feel about the subject of discussion (Krueger & Casey, 2000, p.7). According to Krueger and Casey (2000), focus groups "derive understanding based on the discussion as opposed to testing a preconceived hypothesis or theory", shifting the balance of power from the researcher to the participants (p.12).

Focus groups were used in this study to uncover a rich amount of data from a large number of people within a short timeframe (Morgan, 1997; Kamberelis & Dimitriadis, 2005). During the period of June 27 to July 14, 2012 six focus groups occurred. Research began upon agreement by the six Aboriginal governments and receipt of a research license from the Aurora Research Institute (Appendix 2). A total of 25 people were interviewed; consisting of 8 females and 17 males. Groups consisted of between three and six individuals, aged 17 to over 75. The interviews lasted between 29 and 45 minutes, with an average length of 37 minutes.

Table 5. Information about focus group participants

Code	Town	Date	Age/Sex of participants
Athabasca Chipewyan First Nation	Fort Chipewyan, AB	July 11, 2012	*17/M; 60/F; 65/F
Mikisew Cree First Nation	Fort Chipewyan, AB	July 11, 2012	28/M; 47/M; 56/F; 75/M
Métis Local 125 Fort Chipewyan	Fort Chipewyan, AB	June 27, 2012	27/F; 56/M; 70/M; 72 M;
Fort Smith Métis Nation	Fort Smith, NT	July 13, 2012	34/M; 60/F; 62/M; 73/M
Smith's Landing First Nation	Fort Smith, NT	July 12, 2012	18/M; 20/F; 28/M; 29/M; 29/M; 59/M
Salt River First Nation	Fort Smith, NT	July 14, 2012	43/F; 54/M; Undisclosed "elder"/F; Undisclosed "elder"/M

*Participant turned 18 that year and participated with signed permission from a guardian

When selecting participants for the focus groups, the main prerequisite was that they be Aboriginal peoples from one of the local groups in Fort Chipewyan, Fort Fitzgerald, or Fort Smith who live in one of these towns. Participants were recruited using the gatekeepers and the snowball approach. Gatekeepers are individuals from organizations "who have the power to grant or withhold access to people or situations for the purpose of research" (Burgess, 1984, as cited in Valentine, 2005, p.116), and in this case, these people were employees and members of the local Aboriginal groups. The snowballing process consists of the researcher contacting one person who refers them to another contact, which in turns helps recruit future participants (Valentine, 2005).

Generally, one compares and contrasts the information from a minimum of three focus groups which have "intra-homogeneity (Bosco & Herman, 2010, p.198; Krueger &

Casey, 2000). For the purpose of this study, intra-homogeneity of groups was based on Aboriginal culture; only members of the same Aboriginal community were interviewed at one time. Therefore, there was one interview each with members of the six local Aboriginal groups; the Athabasca Chipewyan First Nation, Fort Smith Métis Nation, Métis Local 125 of Fort Chipewyan, Mikisew Cree First Nation, Salt River First Nation, and Smith's Landing First Nation. Since these groups consisted of between three and six participants they are considered mini-groups, as the standard focus group consists of four to eight people. Though smaller than standard focus groups, mini-groups allow for similar dynamic conversations (Morgan, 2012).

The same interview schedule was used for all six semi-structured focus group discussions (see questions in Appendix 4). An open-ended questioning approach was used to allow participants to express themselves in open dialogue with members of their focus group. The first question in every interview was "when I say the word bison or buffalo, what first comes to mind"? This was asked to help prompt participants to think about all the topics related to bison. Subsequent questioning did not follow a specific order; rather questions were interjected where appropriate, depending on the topic of conversation. When a question was deemed unimportant by the groups, the conversation was redirected towards another more relevant topic.

Throughout the focus group discussions it was important to note non-verbal signs of discomfort and differences in opinion (Smithson, 2008). In addition, to avoid dominant members of a group creating a false sense of consensus, special attention was paid to directly soliciting the opinion of quieter group members and encouraging discussion on points of disagreement (Smithson, 2008; Cameron, 2005). Exploring a wide variety of

discussion topics was encouraged and an effort was made to clarify any misunderstandings throughout the discussions (Cameron, 2005). The interviews did not end until all my questions had been addressed and when the groups themselves felt that they had expressed their own thoughts on these topics or other related issues.

The interviews were recorded using a digital voice recorder, as well as written notes. All interviews were transcribed verbatim into a Word document protected by a password. For the purpose of confidentiality each participant was assigned a code name which includes an acronym standing for the Aboriginal group and a letter identifying the individual.

Data Analysis

Thematic analysis, a qualitative method that involves identification, analysis, and reporting of patterns, was the method chosen to analyze the data in this study (Braun & Clarke, 2006). This type of analysis consists of segmenting, categorizing, and linking small sets of data, which form patterns that become themes (Grbich, 2007; Braun and Clark, 2006). These themes which represent "meaning within the data set" (Braun & Clark, 2006, p.82) are deemed relevant based on their correspondence with the research question and their consistency throughout interviews (Floersch, Longhofer, Kranke, & Townsend, 2010). An inductive, data-driven approach to analysis was taken wherein the codes that were developed came directly from the transcripts (Braun & Clarke, 2006; Nicholas & McDowall, 2012). Thematic analysis was selected because it is a flexible technique and because the intention was not to test a hypothesis, but to discover what insights the transcripts themselves revealed about the study topic.

Analysis was based on the procedure described by Braun and Clark (2006), which outlines six phases of thematic analysis, consisting of (i) familiarizing yourself with the data; (ii) generating initial codes; (iii) searching for themes; (iv) reviewing themes; (v) defining and naming themes; and (vi) producing the report. The first step, familiarizing yourself with the data, involved transcribing the interviews, followed by repeated reading of the transcripts to gain a sense of the "depth and breadth of content" and to identify initial patterns (Braun & Clark, 2006, p.87).

The second phase, generating initial codes, consisted of identifying and organizing data into basic meaningful groups (Tuckett, 2005 as cited by Braun & Clark, 2006). This was done manually by collating segments of data that touched on similar issues and 'post-it' notes to summarize and "identify segments of data" (Braun & Clark, 2006, p.89).

Searching for themes, the third phase, involved "sorting the different codes into potential themes" using a table to arrange them into "theme piles" (Braun & Clark, 2006, p.89). These were subsequently organized into levels of themes "based on the relationship between codes" (Braun & Clark, 2006, p.89), called categories and sub-categories. Categories were groups of codes that showed similar patterns and meanings (Floersch et al., 2010) under the broader overarching themes.

Once sorted into themes and categories, the fourth phase, reviewing themes, began. This involved refining and reorganizing themes to make sure that themes and categories revealed "internal homogeneity and external heterogeneity", as described by Patton (1990) (as cited in Braun & Clark, 2006, p.91). In other words, this meant mitigating overlap while at the same time maintaining the relationship between themes and categories. It also involved ensuring that there was enough data to support each as

independent sets of ideas. Reviewing themes resulted in the creation of a hierarchical system of organization consisting of overarching themes, followed by categories, and sub-categories. This hierarchy aided in "giving structure to a particularly large and complex theme" (Braun & Clark, 2006, p.92).

The fifth phase, called defining and naming themes, involved writing a detailed analysis about each theme. This consisted of telling the story behind each theme as well as how the themes fit within the larger narrative and research question (Braun & Clark, 2006). This exercise helped in refining and clearly outlining themes, their categories and sub-categories, and identifying names for each.

Producing the report was the sixth and final phase. According to Braun and Clark (2006), this involves telling the story of the data in a "concise, coherent, logical, non-repetitive, and interesting account" (p.93). This "analytic narrative" provides an account of the data using extracts from relevant themes to illustrate the argument (Braun & Clark, 2006, p.93).

Results

The results presented are based upon the analysis of data from the six focus groups. Quotes indicate which Aboriginal focus group they are from using an acronym. They include ACFN (Athabasca Chipewyan First Nation); FCMN (Fort Chipewyan Métis Local 125); FSMC (Fort Smith Métis Council); MCFN (Mikisew Cree First Nation); SLFN (Smith's Landing First Nation); and SRFN (Salt River First Nation). A code letter with the acronym indicates the individual participant, but identities have been kept

confidential. For instance, 'ACFN-A' indicates that the quote came from Participant A of the Athabasca Chipewyan First Nation focus group interview.

Results are divided into themes which represent a group of closely connected ideas identified from the dataset through qualitative analysis techniques. These overarching themes are divided into sub-themes that are presented as categories and sub-categories (Table 16). Important to note is that the aim of this chapter is not to compare focus groups, but to broadly understand the views and meanings that the local Aboriginal groups have about bison, disease, and management. However, indications will be made where appropriate about the ways in which participants' viewpoints differed. Based on these thematic concerns, several key arguments were developed: (i) the resolution of trust issues and behavioural conflicts between Parks Canada and Aboriginal peoples must occur before addressing other issues; (ii) improved relationships between Aboriginal peoples and WBNP management could occur if park news was regularly communicated to local people and Aboriginal peoples could take part in bison management; and (iii) Aboriginal peoples could make more meaningful connections between place (WBNP) and their cultural practices if they had access to some bison hunting in the park.

Table 6. Themes and their corresponding categories and sub-categories

Theme	Category	Subcategory
Feelings & Knowledge regarding Bison		
	Condition of herd	
		Bison (general)
		Disease
	Hunting Bison	
		Influence of disease
		Respect for animal
		Culture & Rights (generational roles, value of wild meat)
Park		
	Communication with local (Treaty) Aboriginal peoples	
		Trust issues
		Consultation

The first theme, *Feelings and Knowledge Regarding Bison*, centers on what the local Aboriginal people think and know about bison in the park. Two categories are included in this theme: *Condition of Herd* and *Hunting in WBNP*. *Condition of Herd* explores what people know and have observed about the bison in WBNP in general, including the sub-category, *Bison (general)*. The other sub-category, *Disease*, depicts what participants know and feel about disease in bison. *Hunting Bison* depicts the multiple dimensions of bison hunting, including feelings about the prospect of hunting

bison in WBNP. Three sub-categories are explored; the first being *Influence of Disease*. This sub-category explores how disease in bison would affect participants' willingness to hunt bison in the park. The second sub-category, *Respect for Animal*, depicts how respect ties into how Aboriginal groups hunt bison. *Culture and Rights,* the third sub-category here, explores the sense of entitlement that Aboriginal peoples have about being able to hunt bison.

The second theme, *Park,* encompasses what participants feel about WBNP. Here one category, *Communication with local (Treaty) Aboriginal peoples*, is explored. This category depicts the mixed feelings that Aboriginal groups have about the park. These are explored in the sub-category, *Trust Issues,* which centers more on how past events influence feelings today about the park, and *Consultation*, which depicts how Aboriginal groups would like to interact with WBNP.

Feelings and Knowledge Regarding Bison

Condition of herd

- *Bison (general)*

Feelings and general knowledge about bison in the park vary. The majority of people expressed fondness for wood bison in the park, despite the presence of disease.

> No [my opinion] hasn't changed a bit; I just love 'em! (*SRFN-C*)
>
> Oh yeah, I like the buffalo (...) even if they have disease, yeah. (*FCMN-D*)

Some people expressed vast amounts of knowledge about bison biology and habitat through personal stories about hunting and working with bison in the park. These people were generally males over 50 years old. However, there is a strong feeling that basic information about the wood bison population and management actions are not communicated well to the local people by WBNP. For the most part, most people only see bison when they are traveling on the roads, and primarily hear about bison via word of mouth or in the newspaper on occasion. For this reason, there is uncertainty about what the population of bison is and how the population is doing in general.

> You can't tell [how well bison are doing]. And I believe [WBNP is] in limbo just as much as we are when it comes to bison (...) because they're free-roaming, right? They can't monitor every buffalo or every calf or how many dead, or how many born... It's a guessing game you see, and we can't do that either. (*FSMC-D*)

When discussing the threats to bison survival, many factors were discussed, including predation, drowning, disease, and hunting.

> There's a lot of changes I guess in the park because years back it was high water; everything was plentiful, even the muskrat (...). The buffalos, well they stayed quite a ways out from now where they're at because right across here we lost about two miles of water. (...) I guess that's one change and the herd was so big at one time and now the herd is way down through wolves, drowning, us guys getting a few and all, and sickness I guess killing them too. (*FCMN-C*)

Wolf predation was discussed by many participants as a threat to the park bison population. Some people suggest that wolves have a valuable role in the ecosystem and have an important relationship with bison and other wildlife. They believe that the wolves should be left unharmed. However, some participants attest that calf survival is low and

attribute this to wolves' preference for the young over the sick and old bison. They believe that the wolf population is on the rise and that control measures should be taken, such as hunting or even eradicating the wolf population in the park; a management action that some participants remember happening in the park decades ago.

> I think the large number of wolves. They are a real threat on the herds. Especially the little brownies. You don't see too many of them. (*MCFN-D*)
>
> You could get rid of the wolves. (*SRFN-D*)

Many people also mentioned mass drownings of bison. According to some participants, groups of bison have crossed rivers in the winter and have fallen through the ice. Feelings of disgust were expressed about this because many hold WBNP responsible for cleaning up the carcasses, believing it unsightly and the water to be contaminated.

> Now look at the buffalo that comes to Hay River now and don't drink that water. That has thirty buffalo that are in there. You know? Isn't that something? You know, it's unbelievable. Things like that should be cleaned up! And all of that diseases won't happen. (*FCMN-B*)

- *Disease*

Disease is also named by participants as a threat to bison. Levels of knowledge vary about which diseases are present in the bison population, their origins, and the symptoms of these diseases. Tuberculosis and brucellosis are known by some to originate from outside the park, but many people are unsure about anthrax. However, many people understand that anthrax is in the soil and that hot, humid summer weather creates ideal conditions for anthrax outbreaks.

> It's in the ground, it's in ground with the heat and moisture. (*FSMC-D*)
>
> Well that disease must just come at a certain time of the year (...) and never [hear] of it for years again. And it'll come again. It's just like any other thing. It's natural. (*FCMN-B*)

When discussing the different diseases present in the park, anthrax is perceived as the largest threat amongst the three diseases present.

> Well anthrax is probably the number one. Like the real killer of them I'd say. (SLFN-B)

This is likely because anthrax outbreaks have been known to kill many animals at one time, and garner media attention. Conversely, bison can live with tuberculosis and brucellosis for some time and may not be killed directly from these diseases. The least mentioned disease amongst participants is brucellosis; many participants do not know what it is or the symptoms in bison.

There appears to be a cycle of communication about disease in the park. Most participants say that there is no ongoing communication about disease in park bison. They say that they hear the news of anthrax outbreaks when they happen, but little follow-up occurs. Little is known about the rates of tuberculosis and brucellosis, and some participants were unsure about whether the park still vaccinates bison; a practice that occurred from 1965-1977 (Carbyn, Oosenbrug, & Anions, 1993).

Some participants stated that from time to time they see bison near roads that they believe to be sick due to their thin appearance. These participants expressed sadness and frustration, stating that park managers should humanely kill these animals and inferring

that there is some hypocrisy in how park bison are managed. These participants see WBNP allowing nature to take its course by not killing what they perceive to be sick bison, but conversely, they say park officials have been observed chasing bison back into the park when they step outside the park boundary, which they believe conflicts with the concept of letting nature take its course.

> When we see a buffalo on the road staggering, ribs hanging, there's fur just hanging on the ribcage... I mean that animal should be put down. But the parks, they'll drive right by it and think nothing of it. It will die on its own; they won't do nothing. (...)That animal's suffering, you know. (*FSMC-D*)

> Let Mother Nature care for it... But now when the buffalo come into the Northwest Territories they chase them back [into the park]. Why won't they let Mother Nature look after where they want to go? (...) Why not let that same buffalo roam wherever it wants to roam instead of chasing it back? It goes both ways, you know. Sure you can let Mother Nature take over. Let her have her way. But [let] those buffalos roam wherever they want to roam. (*FSMC-B*)

Overall the presence of disease in bison is not viewed as a big problem or a worry for participants; however, they stipulate that they would not want disease to destroy the entire park bison population.

> That's alright if some of them die, but like as long as there's some left in the end, that would be okay. (*ACFN-D*)

There is little concern about disease transmission from bison to humans because no participant has ever heard of this occurring in the region. Some speculate that perhaps it would be possible if a person ate poorly cooked bison meat.

> If you're going to eat the meat raw, you might get the disease. But if you're going to cook it right, you know, boiled good, like my grandmother said, you can't. Boiled good. Cooked. (*FCMN-C*)

Views differ in terms of how disease should be managed. Some would like to see bison closely monitored for disease, suggesting that quarantining or destroying sick animals are appropriate management actions.

> They should be managed to prevent the spread (*SLFN-C*)
> Quarantine maybe (*SLFN-F*)
> Or kill the sick ones and keep them away from the herd (*SLFN-B*)

Others have fond memories of the days when there were people employed to check the health of bison in the corrals.

> Oh [corralling bison] was a good thing, yeah for sure yeah. You would have doctors and that there now, in them days (...) checking out the buffalo. (...) Yeah, they find out you know. You'd have two gates there – one place sick buffalos, the other place healthy ones. We did lots, boy – they were good! (*MCFN-E*)

There is tentative support for vaccinating animals, as long as vaccinations are effective. It is acknowledged that monitoring or vaccinating all bison in the park presents logistical challenges and is likely quite costly.

> Well how do they know they got every one of them? That's impossible. Not unless they're going to corral them in like they used to in Sweetgrass. Then they had a lot of control. Because they used to corral them and they used to give them vaccinations. (...) If it's going to help the buffalo population, why not, you know. (*FSMC-B*)
>
> I have no problems with it if it helps them, good. If it doesn't then it's just another challenge or issue. (*FSMC-E*)
>
> It costs a lot of money maybe. (*SLFN-D*)

Another set of participants believe that disease is a natural phenomenon that should be left to take its natural course, and that wolves will help eradicate the sick.

> You're not keeping them for a pet. (*FCMN-D*)
>
> I think they should be left alone. I don't know. I mean, you know, they've been on their own for hundreds of years you know. Why bother them now? It's just like nature, right? Like the wolves will get them or something will get them. If they get sick, right away the wolves and that will know they're sick, so they'll kill it. (*ACFN-B*)
>
> The buffalo survived for thousands and thousands of years. It's not man-made. It's not a domesticated animal. The Creator put them on this earth for a purpose, eh? Indian people have been using it for as far as we can remember. As long as people have been around. Today we still do that. Too bad buffalos can't speak for themselves. As people we have to speak for them. The history goes so far back (*SLFN-G*)

Aboriginal participants want to see the bison remain as wild as possible, stating that park bison should not be handled like domesticated animals. Some participants also add that the corral system of years ago caused the animals undue stress and many were killed. However, there is wide support for preventing the spread of disease between park bison and cattle. Most people say that it is the responsibility of cattle ranchers to keep their animals away from the park, rather than preventing park bison from roaming freely. Contact between animals is not seen as a big concern due to the large distance between the park boundary and cattle ranches, and many people believe bison do not wander far from the park.

> It depends on what areas it's in I guess. If it was in the park they should keep other animals away. Like if you talk about cattle, yeah they shouldn't have cattle around there. (*SLFN-B*)
>
> Right now the cattle are quite a ways south from us. It doesn't matter because they don't go that far south. They been kicking about – ranchers have been kicking about that but those cattle are about two-hundred miles, three-hundred miles from us. These buffalos don't go that far. They might go somewheres by the Birch Mountains, but I never known buffaloes to go way out, way over the mountains. (*FCMN-C*)

When discussing the idea of eradicating the entire WBNP bison population, the majority of people state that they are against such action, which they view as too extreme.

Some people share their memories of when culling was discussed in the 1980s, stating that local people were against it and believing that this idea comes from the cattle farmers who hope to expand.

> I was part of it. I went to meetings regarding that. They were going to do away with all the buffalo. No more buffalo in the Wood Buffalo National Park. (...) Because of tuberculosis they were going to put them down, because of sick buffalo. (...) But we stopped that back in '92-'93 around there. We had meetings in Edmonton, McMurray, Smith here, all over the place. And users all around the Wood Buffalo National Park – Garden Creek, Fort Smith, Hay River, places like that... Fort Chip. We met with the Government of Canada... Parks Canada and the federal government and we stopped that. There's no reason to terminate all the little buffalo in the park. There's not very many, eh. Maybe four or five thousand. I think (...) the main reason to do away with Wood Buffalo National Park would be to expand the cattle ranches. (*SLFN-G*)

On several occasions, participants declared that the wood bison are the reason that the park was established, therefore they must remain protected – not destroyed.

> No [slaughtering] unless they have more research done that proves that bison can't recover from anthrax or can't recover from being sick and spreading it. So I'm not sure how far that research goes" (*FSMC-E*)
>
> No I wouldn't want to see them all gone or anything. (*SLFN-B*)
> Don't wipe them out but at least manage it. (*SLFN-D*)

Hunting Bison

- *Influence of disease*

Most participants, especially older people, said that they are not afraid to consume bison meat because they trust that the person hunting the bison would know how to identify disease. There is wide acknowledgement that experienced hunters can tell which animals are diseased by inspecting the organs of a dead bison. Signs of disease are said to

include puss, discolouration, and swelling. A small number of participants stated that if offered bison meat they would turn it down due to concern over disease.

> I myself, I'm not afraid. Especially if I'm going to skin the buffalo, I know if it's a diseased buffalo. (...) Cut him up and you know. Certain parts, you check – even the back of the tongue there's glands there, and if there's puss in there, then you know it's no good. (*FCMN-C*)

> You get a little leery when you work with these animals (...) when you see all this sickness ... and then you got to eat them... So it makes you think twice. I guess it's like trying to eat rotten eggs or rotten fruit. You make sure it's a healthy orange or a healthy cookie – it's not mouldy or no green stuff on your orange before you eat it, right? Same thing with us! We like our food healthy, like everybody else! (*MCFN-C*)

Some hunters who participated said that they can also tell if a live bison is sick as well. They say a clear sign of a healthy animal is an active animal. There is also a preference for young buffalo between two and four years old, partly because the meat is tender and partly because there is a perception that younger bison are less susceptible to disease. For these reasons, there is a general feeling that disease in the bison population does not hold hunters back from hunting bison that wander from WBNP. Participants said that upon discovering that an animal they kill shows signs of disease infection, they simply leave the carcass and try to shoot another bison.

> You can tell just by the way they move around. If they're very active (...) you see those little young buffalos (...) just jumping all over the place and just full of life, eh? (...) Buffalo meat is good. But you've got to just know if it's sick or not. You just check them out. You can tell by just looking at them too. If they're skinny ... (*SLFN-G*)

> A younger one is best because they're less susceptible for disease, right? (...) More tender, and a little bit better eating, right? (...) I've killed a few sick bison that I've had to leave in the wilderness because I just don't think they're healthy, right? You got to cut their glands open and you know, they're all pussed up, right? Big as your fists, so you know it's not a healthy bison. You can kind of tell by the age of an animal too before you shoot them. (*MCFN-D*)

Although many people would be willing to eat bison meat, some stated that getting rid of disease in bison would be beneficial in the long run because bison is a food source for communities. There is, however, some distrust of Parks Canada regarding this issue. Some participants stated that they believe that the park officials say that bison have disease so that local people are deterred from hunting and eating the animals. These participants believe that they are being lied to because they have never heard of people getting sick from eating local bison meat. This notion was not expressed widely throughout the focus groups.

> I think when they say 'Oh they have this disease' (...), right away we're not going to eat it, right? So to me, I think the government says that so we won't eat it. I don't know why... There's lots of buffalos out there. I think they can afford to have one or two they can give to the people around here instead of just looking at it. We drive by in the winter, we drive there in the summertime and all you do is look at it and wish we had it, you know? But it doesn't work that way. (*ACFN-C*)

- *Respect for animal*

Bison are seen as smart, fast, powerful animals that are respected for their heritage on the landscape and are viewed as a symbol for the survival of the Aboriginal peoples in the area who subsisted on bison for hundreds, if not thousands of years. Participants feel that Aboriginal peoples have lived in harmony with buffalo for thousands of years and that it is only in recent history that bison numbers have dropped, which they believe is due to newcomers.

Throughout the interviews there is a feeling that bison are respected and valued primarily as a food source, but are seen by some as having a spiritual value.

> I listen to (...) the elders (...) quite involved in the spiritual aspect. (...) Buffalo is one of their sacred animals. 'White Buffalo Calf Woman' is a true story and brought back some messages to the First Nations (...). (*MCFN-B*)

> For some people there is a spiritual connection (...). Personally it's meat on the table eh. Spiritual connection to me is not really something, but each people got their belief, right? (*SRFN-E*)

> Yeah, even if you go out during the winter time and you see a herd of bison, it just makes you feel good. There's life out there! Where it's quiet and cold. You go out there, even if you're moose hunting and you don't see any moose – you see a herd of bison, it just makes you— or wolves around the bison, foxes, whatever! Ravens... It just makes you feel good. It gives you that little energy to keep going. So they are spiritual and food as well. (*MCFN-C*)

> To me the buffalo (...) was the source of our food. That's why it's so special. If we didn't have those like two, three hundred years ago, I wonder what would have happened to us – to Native people? That's what they lived on. You know they lived on buffalo. They made dry meat out of it. They salted it. They did everything! And that's how our family, our ancestors lived. How they lived is through the buffalo. You know, they talk about more buffalo than they do talk about moose, or elk, or deer. It's always buffalo. (*ACFN-B*)

A vital element observed throughout the interviews is that Aboriginal peoples in the region have always been taught to respect animals. In hunting, this respect is demonstrated by hunters only taking what they need to subsist on, not spoiling the meat, and sharing extra meat with the community; namely elders. Some participants expressed disdain for the few Aboriginal and non-Aboriginal people who they have observed killing several bison at a time, which they argue is wasteful and unnecessary. Some participants even say that on occasion, they will chase bison back into the park because they do not want hunters killing too many of them.

> People know how much to take, you know. We're not going to kill something [for] the pleasure of killing. We're going to kill something because we need it. (...) We don't take anything more than what we need (...) and the Native people have been doing this since the beginning of time, you know? (*FSMC-B*)

> Us people, we were told to respect the animals. Don't over-kill, you know. Take what you need, leave the rest. And don't spoil meat. But I noticed that there's some guys that went hunting (...) don't skin the buffalos until the next day and spoil them. And then they throw it away. It's not right. Yeah so don't go and kill fifty buffalo if you can only skin ten, you know! If you can skin ten, skin ten buffalo. (*FCMN-C*)

There is a sense that Aboriginal peoples would like to be trusted by WBNP management to hunt bison in the park because they would only take what is needed; a notion that was mentioned in focus groups and during casual conversation with local Aboriginal people. Some participants suggested establishing control measures to ensure that a sustainable number of bison are hunted in the park.

> You could get a license for one buffalo or something. (*SLFN-D*)

- *Culture & Rights (generational roles, value of wild meat)*

The issue of being able to hunt bison in the park is linked to preserving heritage, upholding rights, and food security. The vast majority of people interviewed would like to be able to hunt bison in the park because it is part of their heritage on the landscape and they would like this tradition to continue for future generations. There is a strong feeling of ownership and a right to access resources on the landscape in the same respectful manner that has been passed down through generations. Having some access to bison in the park would mean exercising those rights and connecting to culture on the park landscape.

> You know, any animals that I know or fish was Indian resources. The Treaties never did give up – give it to the government. They did sign the Peace Treaty, and loaned the land to the white man so they can come and farm. But as far as I know they didn't give anything away. It's not written anywhere. (*FCMN-C*)

> People like to have buffalo once in a while (...). Sure would like to have that for us at the park. Let the men go hunting for a couple at least and you know, give it to the families. You know, at least once a year or something. It would be really nice, you know, instead of us waiting for the buffalo to get out of the park. It sure would be nice for us to have it at least once a year. (*ACFN-C*)

> I think it's very important to the community of (...) and the First Nations around the area of the park. You know, it's always been here, it's something that is significant of the Wood Buffalo National Park. (...) Using bison (...) is very key in the sense of a healthy well-being, right? Significant to the area. (*MCFN-D*)

When the subject of eating wild bison, or wild meat in general, was brought up in the interviews, many people became excited. They told stories and shared memories of eating bison, and expressed their desire for more of it in their diet. There is a preference for wild meat over store-bought meat. This is partly due to Aboriginal heritage with bison, but is also linked to food security.

> Twenty-seven dollars a steak [at the store], right? [But] you [could] buy a box of 30/30 shells for $27 (...) as well (...) and probably get eight or ten bison out of it. The cost of living up here in a small community – that's the biggest thing (...). Like, Aboriginal food was healthy. Our water was clean, our vegetation was clean. You were healthy. (...) When we got into the Mission, then we got brought into the community and then start eating this store-bought food. The expensive food. It seems like First Nation peoples' health went down. As soon as we got to the store-bought food, Northern Stores, we had no choice. We couldn't kill bison anymore. (...) We'd much rather eat that bison. I'd much rather eat that bison than actually a cow or a pig standing in a little fenced-in area that piss and shit in the same corral and then they kill 'em and then we gotta eat 'em. At least that wild bison he has a lot of freedom and fresh air and clean water. (...) A good healthy bison is healthy food and healthy for humans. And they've been living in harmony, First Nations people and bison for the longest time. You look at right now, a wolf could go and kill a bison but a First Nation person can't. (...) They should have just as much right as that wolf to – whenever they're hungry – to go and take that good and healthy young bison. They'd been living in harmony for centuries before Europeans even came to North America. (...) For local people here, myself, bison means... I guess to me it's our home - where we were born and raised with them. And they [meant] a great deal for us. Not only for food, clothing. (MCFN-C)

The price of food, especially meat, is quite high in these remote communities and there is some concern about the additives and the origins of store-bought meat. Access to some bison meat from the park would not only give people access to affordable and healthy meat, but it would connect them to their culture and heritage. However, some participants are cynical about the possibility of ever being able to hunt bison in the park. They do not

believe it will happen any time soon because, based on their observations, government rules and regulations take a long time to change.

Park

Communication with local (Treaty) Aboriginal peoples

- *Trust issues*

Although Aboriginal groups are able to exercise more of their rights in the park than in the past, some of the negative memories linger and still influence their perceptions of the park and park management today. In the past, bison was a more important food source than it is today and people have memories of family members hunting bison illegally in the park to feed their families.

> My dad used to hunt buffalos a long time ago. But that time you had to go hunting buffalos [on] a stormy, snowy day. Because otherwise if you get caught you'd get charged for killing buffalo. So, that's one thing, because at one time we used to eat buffalo meat, eh? (*ACFN-B*)

They recall the measures that were taken by park staff to try and catch people who hunted park bison. There are also stories of Aboriginal people visiting the park and being told to leave by park officials because they did not have proper identification. Some people say that there were past agreements made prior to the import of plains bison which allowed Aboriginal peoples to be entitled to a certain amount of bison meat, but the imposition of rules and regulations meant that this did not happen.

> I was just reading a little bit about history and my dad (...) [who] was a Chief in the sixties, early seventies (...) was interviewed (...). He said that going back in history, (...) when the Wood Buffalo [National Park] really came on strong about protection of the buffalos the original agreement (...) between Wood Buffalo and the First Nations was they would get so much buffalo [meat], right? They were supposed to be given. [But] Wood Buffalo put rules and stipulations in there which kind of... I think the First Nations felt shunned from the agreement. (*MCFN-B*)

These memories have tainted some peoples' relationship with the park. Today there is an underlying tone of distrust and many people still feel like outsiders. Among some, there is a perception that park officials do not want Aboriginal people in the park, that they hide information from local people, and that they even lie about the presence of disease in bison so that local people do not hunt them.

> Parks don't want you in their area, simple as that. And the only way you can get to buffalos is in the park. (...) And when they do come into the Territory they don't stay in there long because they get chased back by the park. (*FSMC-D*)

> Government says something and they think we all have to believe it? (...) You know, it's only a way to make sure nobody goes and shoots it whenever they want. (...) How come some people are hunting buffalos and are eating buffalo meat? You know? So they must be lying, you know?! Because people are eating the buffalo meat. (*ACFN-B*)

Some participants who expressed bitterness about the park also stipulated that they have no desire to visit WBNP and only go through it when they travel on the winter road. They believe that many decisions regarding the park are made by people in other parts of the country who do not understand the on-the-ground reality of the decisions that they make.

> No that's the people in Winnipeg sitting behind big desks and just giving orders [about] how things should be run over here. They don't even know what this land looks like! (*FSMC-B*)

By the same token, there is a desire for more local and Aboriginal representation among WBNP staff. Some participants believe that the staff who move from other places to work in the park are only

there temporarily and that such people do not have a deep understanding or commitment to the park or the communities in the surrounding area.

> These people that come in from different parks ... Jasper park or wherever... You know they don't know what's going on in this park. It's just somewhere that they can come to for a couple of years and then they're long gone. (...) There is no commitment! You know... but when you live here, you know, it's a different ball game. (*FSMC-D*)

Some participants observe that there were some positive aspects of the past relationship between park staff and communities. They say that in the past wardens would travel by dog teams and interact with the trappers, which created positive relationships; something that they say has been lost. Today they say park staff members stick to themselves, but there is a desire for wardens and other staff to foster more genuine relationships with people in the communities through more interaction personally and professionally.

> You know, they stick to themselves. They're like RCMP. A lot of RCMP, you never see them in the community. You might see them walk around into the bars and stuff you know, but they're on duty. But to go join functions that the community have? You don't see that. (...) They don't mingle with the people! (...) Parks Canada, same thing. But boy, when they throw a party out at Pine Lake with hot dogs and stuff they want everybody to come out there. (*FSMC-D*)

> Long time ago it used to be different because they used to have to travel in dog teams too. Go from one community to another. And along the way they used to have to camp because it's a long travel by dog team – not like skidoos. And then, they mingled with the people. They got to know a few trappers. [One warden] used to camp over at our house all the time. Him and my dad would sit up two nights sometimes, just telling stories! It was good! But you don't see that anymore. (*FSMC-B*)

> They like showing their authority. (...) [It's] just like them wearing czar diamonds. Wearing guns. Yeah you know, you take ninety percent of the hunters that go out, they go out in a group. After they've done their kill, they sit down and drink their beer. And this guy comes in hanging onto his gun to talk to them and somebody's going to get killed. You know, if they're half-decent guys that will sit down and have a beer with the boys everything will be okay. (*FSMC-C*)

Many people would like to see park presence through more visible patrolling by staff and receive more information on what the park is doing. There is, however, a feeling that the

protection offered to bison through the park is valuable. Some say that they are happy in knowing and trusting that bison are being protected for future generations to witness.

> I think Parks Canada they're supposed to look after this park. You know I travel lots in the park. You know I go to Peace River, I go to Chip, I go to Hay River. I don't see them patrolling the park. (...) I don't know, they've got all the vehicles over there. They could get gas anytime they want. Maybe their guys are too lazy. (...) If they can't do the job then they should give it to the First Nation people. We'll do it for them. It would be better looked-after. (*SRFN-E*)

> I want them to be around, buffalo, that's what I want to be. People are going to be too old to do any hunting but the future generations to come down the road (...). These young people are going to have families of their own. I just want them to be around forever. It's okay, I don't mind them, (...) all these guys. They study them for a reason. To try to preserve the buffalo and make sure they're healthy and all that kind of stuff. I don't mind that. (...) Like wolves for instance. They study them to make sure everything is going to be okay for them, wildlife. It's okay I don't mind that. (...) We're not just going to be looking at pictures down the road. Future generations of people are going to enjoy buffalo and look at them. Not necessarily just to kill them but to look at them and know that they're around, that's all. (*SLFN-G*)

- *Consultation*

What was especially strong was the message that Aboriginal peoples want to be further included in park decisions and provided with regular updates on what is happening in the park.

> The parks don't come up and tell us nothing. (...)Yeah as long as I been here, I never seen parks go out of their way. (*ACFN-B*)

> I'd like to know what's happening because the land is ours. (*FSMC-B*)

> No. We never hear anything. We never hear anything from the parks. What they know they keep to themselves. (...) And if we do get anything it's probably about anthrax or Tb or something. That's all they'll let us know but they won't let us know how much of it is happening. (*FSMC-B*)

There is a feeling that communication about research results and events that occur in the park has been sporadic, and people would like to be more informed in the future. Since many feel that the park is on their traditional land, there is some bitterness over the

apparent lack of control and inclusion that Aboriginal peoples have in decisions concerning the park.

> You know sometimes I think about this and what it comes [down] to is we got no say in what goes on in the parks. Because the parks, the wardens, do not involve us in any of their doings. You know, and we've got no control whatsoever in what goes on with buffalos over there. No control of wolves, no control of anything. The parks got all the control of that. (*FSMC-B*)

Cooperative management is referenced as a goal in the 2010 Wood Buffalo National Park Management Plan and park management has been meeting regularly with Aboriginal groups to develop and implement this approach. There is recognition from focus groups that improvements are being made, such as community consultation and involvement in the Peace Athabasca Delta Ecological Monitoring Program, however, some people would like park officials and Aboriginal peoples working together to manage the park, and some would even like to see co-management or cooperative management. However, there is also an understanding that this type of change would be difficult, time consuming, will take time and effort and some Aboriginal people think that realistically, partnerships of this nature will never happen in WBNP.

> They were born and raised with the bison so I think in general it would be really nice if local people, (...) Aboriginal people [get] involved and work together in co-management or cooperative management with Parks Canada, you know in order to preserve these bison. And because you look at it ... with bison I think the Aboriginal people done an excellent job managing bison because we had them for centuries. And the Park just started managing them since 1922. Not even a century. So I think they (...) gotta get more local people, Aboriginal groups, working together and protecting these bison or managing them. (...)To First Nations people, they're our animals. (...) Were those [plains] bison actually tested then, before they were brought into the park or did they bring the disease as well too? So who do we point a finger at? We don't point fingers at anybody, but I think we got to start managing it now together and going from there. Going forward from there. (*MCFN-C*)

> Yeah, and you sit down with parks and you try to go through their regulations, and try to change some stuff. You know, boy it's like pulling teeth! It is. And we're not dentists! (*FSMC-D*)

> Even for them to change a few little rules, it took them about forty years to do that. And that's the people that's sitting at the desks in Winnipeg that's telling us how to live on our land. (FSMC-B)

Many also believe that Aboriginal peoples should also be partners in research that occurs in the park, and some said that more Traditional Knowledge should be included in studies by researchers. Some suggest that young people from the communities would benefit greatly from being involved in park studies and field trips regarding bison and other park wildlife.

> With Parks, yeah we want to know what's going on, what they're going to do. If they're going to kill them (buffalo) off or if they're going to inoculate them or are they going to chase them, you know? We've got to have our say. (...) I think the non-Native people now they have to understand that when they do different studies they have to come to Traditional Knowledge also. Because you know even though the buffalo are in the park, we still live by them. (...) And I think it's coming to that, where they have to come negotiate with us. (*SRFN-E*)
>
> Coming from the classroom where I teach the Aboriginal Studies, it would be good to have the students' involvement too. (*MCFN-B*)
>
> (...) Set traps and show people how to live off the land. (...) You [could take] the students (...) out there now and let's say you want to study bison. Well you know if you work closely with Parks Canada, they want to know if that bison is healthy or not as well too. So if you take a biologist out there and show him what to look for and what's a healthy bison. What's a bison with brucellosis, what's a bison with tuberculosis and whatever. And I think getting kids involved is an excellent idea because they're our future and they may be our managers one of these days. (*MCFN-C*)

Aboriginal participants see a place for their children in the park as users of the landscape and future park managers. Therefore, there is a desire for further opportunities for community members, namely children, to interact and learn through experiences in the park. The notion of involving and educating young community members in the park indicates that participants see value in WBNP and a future for their communities working with the park.

Discussion

The results of this chapter provide an overview of participants' perspectives on bison, disease, and park management in WBNP. Through thematic analysis of six focus groups with six Aboriginal groups in two regions, Fort Fitzgerald / Fort Smith and Fort Chipewyan, two overarching themes were revealed: *Feelings & Knowledge regarding Bison* and concerns about the relationship with the *Park*. The following section provides a summary of the key findings in conjunction with a reflection on the meaning of these findings within the literature. This is followed by recommendations for WBNP management and future research.

The first theme contained several categories and subcategories which reveal what participants think and know about bison in the park. This theme illustrates that participants are fond of bison, despite the high rate of disease in the park. Bison are seen as spiritually valuable by some, but primarily valuable for food and are viewed as a cultural symbol for the heritage of Aboriginal peoples on the landscape. Overall disease is not viewed as a high concern to participants as long as the bison population is not dramatically affected. There is however a divide on how bison disease should be managed. Some say that vaccinating, quarantining, or culling sick animals is an appropriate management action while others believe that leaving bison alone to fight disease is the best management option. The majority of participants do not view the destruction of the entire WBNP population of bison as an option; in fact, there is high support for protection of bison in the park.

This theme also demonstrated that people had an awareness of the threats to bison survival. Amongst the three diseases present, anthrax is perceived as the biggest threat to bison in the park, however, this may be due to the media attention garnered by anthrax outbreaks. The focus groups pointed to an apparent lack of information or updates from the park regarding threats to bison as well as the condition of the park herd in general. Some distrust of WBNP regarding this issue was apparent, as some participants believe that the park is lying to local people about the presence of disease to deter them from hunting bison. In addition, there is a general low concern about possible disease transmission to humans, as many participants stated that experienced hunters know how to identify a diseased animal. A key element observed throughout the focus group interviews is the notion of respect for the bison, which is tied to the idea of hunting only what is necessary. This relates to a strong feeling throughout the focus groups that local Aboriginal peoples would like access to some bison meat in the park as a part of preserving heritage, upholding rights, and food security. There is a strong cultural connection to hunting bison and a general preference for wild meat over store-bought meat. This ties into the wider literature which has shown documented preferences for traditional food by Aboriginal peoples (Willows, 2005; Wein & Freeman, 1992; Elliott, Jayatilaka, Brown, Varley, & Corbett, 2012; Schuster, Dickson, & Cgan, 2011).

The second theme, *Park*, revealed the mixed feelings that Aboriginal groups have about the park. Past events still influence negative feelings today about the park, which is supported by Schelhas and Pfeffer (2005), who argued that tensions between local people and parks are related to historical differences in how they each perceive nature and the purpose of a protected area. Hunting bison was a major part of subsistence livelihoods,

and though it was illegal to hunt bison in the park, some participants recalled memories of the measures that people took to feed their families. Other participants recall feeling excluded from the park and remember agreements that were not met regarding access to bison meat. These memories of poor interactions between Aboriginal peoples and the park have tainted some peoples' relationship with WBNP. This has brought some to the conclusion that they are unwelcome in WBNP and that they are sometimes misled and lied to by park representatives. These results mirror the literature that confirms that common problems between parks and their neighbouring communities include a lack of trust (Bissix *et al.*, 1998; McCleave *et al.*, 2004; McCleave, 2006), poor collaboration, and inadequate communication between parks and local communities (McCleave, 2006; Danby, 2002; Parks Canada, 2000; Beresford and Phillips, 2000).

There is a feeling that decisions made by park officials are often made by individuals who have little familiarity with the area. Likewise, many people voiced the desire to have more local Aboriginal representation among WBNP staff. There are, however, some positive memories associated with the days when park officials would interact more with trappers and their families. Today there is a feeling that relationships between staff and local Aboriginal peoples is lacking. There is therefore a desire for staff today to form more genuine relationships with people in the communities both personally and professionally. This could most easily be done by park staff participating in community activities whenever possible.

Most strongly emphasized amongst the various themes is trust issues and the importance of communication with local Aboriginal peoples. There is a desire for regular updates made available to Aboriginal residents on issues like research programs, research

results, patrolling, disease, and the state of bison in general. Likewise, there is some bitterness over an apparent lack of control or input in decisions regarding management of WBNP. There is recognition that improvements to this end have been made, however, some would like to be included more and see great benefit to the communities if they could actively participate in park activities, such as research. They would like to see a future for themselves and their children as a part of the park community and as future park managers.

Although many participants describe the relationship between the park and Aboriginal peoples as inadequate, there is an overarching feeling that the protection offered to bison by the park is valuable. People want bison protected for generations to come, however, they also wish to be further included by WBNP as partners on the landscape.

Recommendations

The purpose of this study is to assist park managers and the local Aboriginal groups in the areas of Fort Smith / Fort Fitzgerald and Fort Chipewyan to understand the various perspectives of Aboriginal peoples regarding the future of bison in WBNP. Given the value that the majority of Aboriginal participants place on the presence of bison on the landscape, it is advised that efforts are made to sustain and protect the bison of WBNP, not only for their ecological value but also for their cultural value. There is a desire amongst participants for a respectful and controlled bison hunt within the park. This would enable Aboriginal peoples to practice traditional harvesting by engaging with the landscape of WBNP; an action that would perhaps create (or re-establish) more

meaningful ties to the land. While hunting inside Canadian national parks is rare, park managers should consider how the values of the bison from an Aboriginal perspective are really very similar to those espoused and strived for in stewardship initiatives by Parks Canada.

The most glaring problem identified in this study is a lack of communication between WBNP and the Aboriginal communities regarding bison, disease, and management. Levels of integration of local interest groups and government agencies in management approaches can occur within a wide spectrum of techniques and models. The trend in recent years has been to involve and engage interest groups in more aspects of management, including in the field (Lauber, Decker, Leong, Chase, & Schusler, 2012). Based on the results of this research as well as the literature regarding the importance of working with communities to achieve conservation goals (Hill, 2009), it is recommended that WBNP consider exploring transactional or co-management approaches in future decision-making processes regarding wood bison while also building from "past lessons and errors (...) to achieve a more robust and fruitful alliance" with interest groups in the future (Castro & Nielson, 2001). Management choices regarding bison and disease should be discussed openly in a two-way exchange with the local people to i) *understand* the issues and challenges that the park faces; and ii) *discuss* possible management choices. Although the park has working relationships with the Aboriginal governments, every effort must be made to give the average community member an understanding of what is happening in the park and the opportunity to participate in the management decision-making process. Achieving long-term conservation success requires "recognition that the support and cooperation of people neighboring wildlife habitat is necessary" (Hill, p.118,

2009). One way of achieving this would be through meaningful community participation in decision-making, such as the creation of a park advisory board or an Aboriginal management board dedicated to bison. Similar advisory boards exist within the park, such as the Pine Lake Land Use Advisory Committee (Parks Canada, 2010). Another approach, mentioned by focus group participants, would be Aboriginal involvement in the field alongside Parks Canada staff when managing wood bison.

While some Human Dimensions literature has focused on attitudes toward wildlife and disease (Needham, Vaske, Manfredo, 2004; Vaske, Shelby, Needham, 2009), this research fills a gap as no research is focused on Aboriginal attitudes toward wildlife and disease. Future research looking into Aboriginal perspectives on disease and wildlife management is important.

Conclusion

Aboriginal peoples across Canada today are the largest and most powerful group advocating for the establishment of national parks (Dearden & Langdon, 2009); a testament to how far Parks Canada has come since the days of expulsion and expropriation (Sandlos, 2014; McNamee, 2010). Management of newly established parks increasingly involves collaborations with Aboriginal peoples (McNamee, 2010) and laws have been created to include Aboriginal peoples in Parks Canada decisions, such as the duty to consult (Parks Canada, 2011). As seen in this study, despite these improvements many of Canada's older national parks still struggle in navigating deeply controversial histories with their Aboriginal neighbors to build strong partnerships. Most evident in this

study is that Aboriginal peoples not only wish to be seen as partners on paper, but wish to have an ongoing dialogue with WBNP resulting in a genuine sense of inclusiveness. Through active engagement by sharing and listening with community members, a new relationship could be fostered in WBNP wherein Aboriginal peoples are included and treated as partners; an action that is crucial to success in northern wildlife protection (Decker & Chase,1997; Osherenko, 1988). This would aid in eroding the hierarchical system of decision making to promote choices that elicit enduring community support and foster a management system that is adaptive and collaborative.

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Part III: Thesis Summary

The purpose of this thesis is to gain an understanding of local attitudes in Fort Chipewyan and Fort Smith toward wood bison, disease, and management in Wood Buffalo National Park of Canada. The following section consists of a summary of key findings from the qualitative and quantitative research, a description of how this study fits within the literature, recommendations to managers on policy development, and finally recommendations for future research. By taking a holistic approach using mixed methods, it was possible to ensure that results were both relevant and accurate (Hines, 1993). In using quantitative questionnaires, a broad understanding of Aboriginal and non-Aboriginal perspectives on the issue of wood bison, disease, and management was achieved. This generalizable data allowed me to characterize the attitudinal landscape. To gain a more in-depth understanding of Aboriginal perspectives on this issue, qualitative focus groups were used to ensure accurate representation of potentially vulnerable populations and to raise other issues of importance regarding bison and management. It allowed me to increase my personal understanding of how history, culture, and personal experience influence perceptions and to appreciate the issues and politics relevant to this study (Flint, 2006).

10.0 Key findings

The first paper details the quantitative portion of this study through the examination of two main concepts: (a) normative beliefs toward bison and (b) attitudes toward potential bison management decisions using a quantitative interview instrument.

These concepts are compared by Aboriginal and non-Aboriginal status. Despite the presence of disease, the majority of participants hold positive attitudes toward bison. Though there are cultural differences between Aboriginal and non-Aboriginal residents on how bison are valued, on average local people agree on how WBNP bison should be managed.

Both methods utilized show that the majority of participants like wood bison in WBNP, despite the presence of disease. Important to note is that both quantitative and qualitative studies reveal high support for the protection offered to wood bison through the federal park and low support for the destruction of the entire WBNP bison population as a means of managing disease. Though levels of support vary amongst groups and regions, the questionnaire reveals consensus amongst Aboriginal and non-Aboriginal residents regarding the acceptability of various management strategies. Suggested management options such as doing nothing, relocating the herd, or reducing the herd are largely seen as unacceptable. There is wide support for reducing the spread of disease to bison populations outside the park, and acceptable management options include collaring or tagging bison, vaccinating animals, and monitoring without physical contact.

The quantitative study shows that Aboriginal residents consider bison more valuable for ceremonial, spiritual, economic, and food purposes than non-Aboriginal respondents. Upon further discussion in the focus groups, it is understood that Aboriginal peoples see bison as primarily valuable as food, and in turn, a symbol of Aboriginal heritage on the landscape. Focus groups reveal that Aboriginal peoples would like to continue the legacy of accessing bison meat in the park; a notion that is linked to

preserving heritage, upholding rights, and food security. They also reveal an overall low concern regarding the possibility of disease transmission to humans, with many participants stating that experienced hunters could identify diseased animals. Despite this, results from the questionnaire point out that the majority of Aboriginal residents would feel discouraged about hunting bison in the park, given the presence of disease. Though this may seem inconsistent, it could mean that Aboriginal peoples trust experienced hunters to identify disease, but many individuals would feel unsure about identifying diseased animals themselves if they were able to hunt bison in the park. Nevertheless, focus groups reveal a strong cultural connection to hunting bison and a general preference for wild meat over store-bought meat.

Focus groups aided in confirming attitudes toward various management options, but also went further to help identify the views and meanings that members of the local Aboriginal groups have about WBNP in general. It was apparent throughout the focus groups that people feel as though there is a lack of communication from WBNP about the threats to bison and the condition of the herd. Furthermore, tensions exist due to poor interactions in the past between the park and Aboriginal peoples; memories which continue to influence people's feelings today about the park. This has led to feelings of exclusion from the park and distrust of park representatives. Strongly emphasized throughout the focus groups are trust issues and the importance of communication between local Aboriginal groups and WBNP. There is a desire for more local Aboriginal representation in WBNP staff and for staff to form more genuine relationships with people in the community. Not only would Aboriginal groups like to see more

communication in the form of regular updates on issues such as research programs and the condition of bison herds, but they also see active participation in decision-making and park research as activities that would be of great benefit to the community and relationship-building.

11.0 Contributions to Literature

The mixed methods approach of focus groups and questionnaires proved beneficial for exploring issues related to bison, disease, and management in communities around WBNP. The questionnaire provides a broad understanding Aboriginal and non-Aboriginal attitudes, while the focus groups reveal fundamental issues important to Aboriginal residents. The value placed on wood bison in the park, the management options deemed acceptable and unacceptable, and finally the issues of trust and communication identified in this study demonstrate that it is indeed worthwhile to take into account the social aspects of wildlife management.

This study is a valuable contribution to the Human Dimensions discipline and wider academic literature for several reasons. Firstly, it is one of the few HD studies focusing on Aboriginal attitudes toward wildlife and disease and the nature of Aboriginal and non-Aboriginal attitudes. Secondly, HD research on human attitudes toward wildlife diseases is important (Decker et al., 2006) yet limited (Needham, Vaske, Manfredo, 2004; Vaske, Shelby, Needham, 2009), therefore this research contributes to filling a gap in disease-related HD research. Results from the quantitative chapter are similar to results found in the literature regarding wildlife disease management; such as the need to

minimize disease transmission and disapproval of a 'do nothing' approach (Petchenik, 2006; Vaske, Shelby, & Needham, 2009). The results from the qualitative chapter also mirror the literature stating that common problems between parks and their neighbouring communities include a lack of trust (Bissix et al., 1998; McCleave et al., 2004; McCleave, 2006), poor collaboration, and inadequate communication between parks and local communities (McCleave, 2006; Danby, 2002; Parks Canada, 2000; Beresford and Phillips, 2000).

This research is not only academically significant, but also has important applied implications. For instance, the literature has suggested that wildlife managers have a tendency to make their own conclusions about interest group attitudes; conclusions that often lead to decisions that cause unnecessary "collateral impacts" (Decker et al., 2006, p. 157). Interest group involvement "has become a central element in wildlife management" (Riley, Siemer, Decker, Carpenter, Organ, & Berchielli, p.82, 2003), and in response agencies have experimented with various techniques (Chase, Schusler, & Decker, 2000). Based on the literature regarding the importance of working with communities to achieve conservation goals (Hill, 2009), this research can be used directly by WBNP managers and local Aboriginal governments as an early step to incorporating public opinion into decision making and improving education and communication needs. It has been shown that understanding the acceptability of management actions "encourages incorporating public opinion" and "having public and stakeholder support facilitates the success of wildlife disease management" (Vaske, Shelby, Needham, 2009, p. 256). Likewise, it is also important to understand public trust in wildlife management agencies, as "efforts to

maintain agency trust can foster positive relationships with constituents and increase support for management actions" (Vaske, Shelby, Needham, 2009, p. 256).

12.0 Recommendations for Policy Development and Management of Bison

The purpose of this study is to provide information that will aid Wood Buffalo National Park of Canada managers and Aboriginal governments in Fort Chipewyan and the Fort Smith area in the future management of wood bison. This case study serves not only as unique research in the academic field, but as a platform for local interest groups, including Aboriginal peoples, to voice their opinions and concerns about wood bison, disease, and management in WBNP. Detailed quantitative and qualitative data that is representative of the attitudes and opinions of WBNP's local interest groups provides managers with a clear framework for decision making that incorporates public opinion into future management plans.

The following is a list of recommendations that can be taken under advisement from the results of this study:

i) Continue to sustain and protect the bison population of WBNP, while also minimizing the risk of disease transmission to herds outside the park.
ii) Take into account those bison management actions that are deemed acceptable and unacceptable to local community members. Acceptable actions are vaccinations, collaring/tagging and monitoring without

physical contact. Unacceptable management actions are reducing the herd significantly, relocating bison, and doing nothing to manage bison.

iii) Consider a controlled bison hunt within WBNP for local community members, namely Aboriginal peoples, with the aim of allowing these interest groups to engage with the park landscape, engage in traditional practices, and establish more meaningful ties to the landscape – and to bison.

iv) Maintain an open dialogue with Aboriginal governments and community members on the issues, challenges, and decisions that the park faces. This could be accomplished through a two-way exchange between WBNP managers and local people to understand the issues and challenges that the park faces and discuss possible management choices. Though levels of local interest group integration into decision making can occur along a spectrum of techniques and models, it is recommended that WBNP consider exploring transactional or co-management approaches. The creation of a park advisory board and perhaps a group dedicated to the issue of wood bison management are possible means to achieving these goals. Similar advisory boards exist within the park, such as the Pine Lake Land Use Advisory Committee (WBNP Management Plan, 2010).

13.0 Recommendations for Future Research

Throughout this study the attitudes and beliefs of people toward bison, disease and management are explored using both quantitative and qualitative research tools. The results indicate that Aboriginal peoples assign more value to bison for cultural, economic, spiritual, and food uses than non-Aboriginal respondents. There is also an indication that Aboriginal peoples would like the ability to hunt bison in the park. The historical and present value of bison to local Aboriginal peoples in the region and the feasibility of park bison hunt could be further explored in future research.

The scope of this study is limited to two regions and six Aboriginal groups. The park has eight Aboriginal Reserves within its boundary and works with five communities in the area which consist of eleven distinct Aboriginal groups. It is recommended that similar research be conducted with the other five Aboriginal groups that exist in and around the park: the Deninu'K'Ue First Nation, Fort Resolution Métis Council, K'atl'odeeche First Nation, Hay River Métis Council, and the Little Red River Cree First Nation. It would be beneficial to understand and include these other groups and communities in similar studies of attitudes and beliefs toward bison and disease in WBNP to get a complete sense of what local people think of bison and possible management options. It could also be beneficial to understand what the perspectives are of Aboriginal, provincial, and territorial governments toward the various bison management options.

The majority of respondents indicate that they would prefer bison and cattle populations outside the park to be protected from disease transmission, yet they also

specify that this cannot be at the cost of destroying the park herd. An interesting comparison would be to understand what the perspectives are of people in other nearby communities which contain cattle or other bison populations.

Throughout the course of this study 35 questions were asked in the quantitative survey and several themes appeared in the qualitative study, however, for the purpose and scope of this dissertation only the most relevant questions and themes were analyzed. The other questions and themes, as seen in the appendices, could be analyzed in the future.

Although this study did not deeply explore TEK, future researchers could examine Aboriginal hunters' traditional knowledge about wildlife disease recognition and even discuss the similarities and differences with western science beliefs about wildlife diseases. An effort could also be made to understand the traditional importance of bison amongst the various Aboriginal groups.

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Appendix 1: Letter to Aboriginal groups

Sent April 2012

Alice Will
Department of Geography
Memorial University of Newfoundland
St. John's NL
Tel: (709) 764-0339

[Date]

[Recipient]
[Group]
[Town]

Dear [Recipient]:

I am writing to you to introduce myself and my master's degree project and to seek [Group] approval to conduct this research in your community. Born and raised in Newfoundland, I have always been fascinated with the outdoors, wildlife, and communities that have close relationships with wilderness. With a bachelor's degree in Environmental Studies, I've also had the opportunity to work in national parks and live in Aboriginal communities, such as Squamish, BC and most recently Fort Chipewyan, AB. My proposed project emerged after I had the opportunity to live and work in Fort Chipewyan as a Parks Canada employee. I have thoroughly enjoyed getting to know local people in communities around the park and understanding the relationship between people and the environment and wish to continue my understanding of this relationship. I wish to continue my education while also contributing knowledge to the local area that would build stronger relationships between communities and Wood Buffalo National Park (WBNP). With a particular interest in wildlife-human relationships, I have decided to pursue studies focused in the field of Human Dimensions of Wildlife.

The Human Dimensions of Wildlife is a field where researchers try to understand people's attitudes and behaviours toward wildlife and wildlife management. In my research, I am trying to understand local people's attitudes and behaviours toward wood bison in communities in and around Wood Buffalo National Park. Although this is an independent study that I am conducting as a student of Memorial University, I am working in cooperation with Parks Canada because they are interested in what local people think of bison and how they are being managed or could be managed in the future. With the presence of disease in the park bison population, park management is faced with

making decisions about disease containment, while also protecting this threatened species and their importance to the local communities. Is disease amongst bison a concern for local people? Has it affected the importance of the bison to local people? Collaboration with local communities, particularly the Aboriginal groups in and around the park, will be essential to the development of a successful wood bison management strategy.

For the purpose of this research I am hoping to spend time in Fort Chipewyan, Fort Smith, Fort Fitzgerald, and Garden River this summer. In May my supervisor, Dr. Alistair Bath, and I are hoping to travel to each of these communities to meet with local Aboriginal groups to listen and learn about how to shape this study and provide something useful to the community.

We would like to meet with you between May 12th and 19th to have an informal discussion. If you have any questions or concerns, feel free to contact me anytime at (709) 764-0339 or by email at alicewill@live.ca . You can also contact Dr. Bath at (709) 864-4733 or abath@mun.ca.

Thank you for considering this request. I look forward to returning to the area and hopefully meeting you in the near future.

Sincerely,

Alice Will
Principal Investigator

Appendix 2: Aurora Research Institute Research License

Licence No. 15079
File No. 12 410 916
June 04, 2012

2012
Northwest Territories Scientific Research Licence

Issued by:	**Aurora Research Institute – Aurora College** Inuvik, Northwest Territories
Issued to:	Ms. Alice Will Memorial University Department of Geography Memorial University St. John's, NL A1B 3X9 Canada Phone: (709) 764-0339 Fax: (709) 864-3119 Email: alicewill@live.ca
Affiliation:	Memorial University
Funding:	Wood Buffalo National Park
Team Members:	Alice Will; Dr. Alistair Bath
Title:	**Integrating Human Dimensions Research in Wood Buffalo National Park: Understanding Attitudes, Beliefs and Values toward Wood Bison and Bison Management**
Objectives:	To understand public attitudes, beliefs, and values toward wood bison and their management in Wood Buffalo National Park.
Dates of data collection:	June 4, 2012 to August 31, 2012
Location:	Fort Smith

Licence No.15079 expires on December 31, 2012
Issued in the Town of Inuvik on June 04, 2012

*** original signed ***

Pippa Seccombe-Hett,
Director, Aurora Research Institute

Appendix 3: Focus group consent form

Integrating Human Dimensions Research in Wood Buffalo National Park:
Understanding Attitudes, Beliefs, and Values toward Wood Bison and Bison Management

A project by Memorial University, in cooperation with Parks Canada and the Aboriginal groups of Fort Chipewyan, Fort Fitzgerald, & Fort Smith

Hello, my name is Alice Will and I am a master's student in geography from Memorial University in Newfoundland. The university, in collaboration with the local Aboriginal groups of Fort Chipewyan, Fort Fitzgerald, and Fort Smith as well as Wood Buffalo National Park is interested in learning more about local people's opinions toward buffalo in the park. This is a focus group that is intended to help in understanding your opinion about wood bison and bison management in Wood Buffalo National Park. This is part of the field work that I am developing to for a Master's degree at Memorial University. You have been chosen to answer these questions because you are a resident here and your opinion is valuable to understand what the local community thinks about these issues.

This part of the discussion is intended to inform you about your freedom to stop the focus group at any point during its conduction and to decline to participate at any point during or after the focus group. This focus group will take you around 1-1.5 hours. There will not be negative consequences to you for refusing to answer the questions, now or in the future. This focus group is confidential and the data collected by the Principal Researcher will be kept confidential and anonymously stored in a safe place for a minimum of 5 years, as per Memorial University policy on Integrity in Scholarly Research.

Your Band, the [Group Name], is the sole proprietor of any audio recordings during this focus group. These recordings will be used by the Principal Researcher for the sole purpose of informing her thesis and any journal articles, scientific meetings or presentations.

The only limits to confidentiality are through the methods used in the data collection. When focus groups happen, participants will know who the other participants are in their particular focus group and will hear their responses. Beyond this, there are no other known limits to confidentiality. The results of this study will be communicated in form of a thesis, as journal articles and in scientific meetings or presentations, only quoting sentences or phrases, without mentioning personal identity.

The proposal for this research has been reviewed by all local Aboriginal leaders, the Aurora Research Institute, the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at (709) 864-2861.

This is a personal and individual project, with no linkages to any other investigation being conducted in Canada at present. The funding support that I have to conduct this research is based on support from Parks Canada and Memorial University.

You can access to the results of this research when it will be ready, either through the Aurora Research Institute, your local Band Council, library facilities or by contacting,

Alice Will (Principal Researcher)

Email: alice.will@mun.ca

Geography Department
Memorial University of Newfoundland
Tel: (709) 864-7417

Alistair Bath, Ph.D. (Research Supervisor)
Email: abath@mun.ca
Tel: (709) 864-4733

Consent

The following statement will ask for your written consent for me to interview you. Please sign below if you agree to the statement:

Yes, I agree to be interviewed for the study, *Integrating Human Dimensions Research in Wood Buffalo National Park: Understanding Attitudes, Beliefs and Values toward Wood Bison (Bison bison athabascae) and Bison Management*, and clearly understand what the implications of be part of it are.

Name: _____ **Signature**: _____

Date: _____, 2012

Appendix 4: Focus group questionnaire

Integrating Human Dimensions Research in Wood Buffalo National Park: Understanding Attitudes, Beliefs, and Values toward Wood Bison and Bison Management

A project by Memorial University, in cooperation with Parks Canada and the Aboriginal groups of Fort Chipewyan, Fort Fitzgerald, & Fort Smith

Questionnaire: Focus Groups

1. Are you: ☐ Male or ☐ Female
2. Are you a hunter? ☐ Yes or ☐ No
3. Have you hunted buffalo before? ☐ Yes or ☐ No
4. What is your age? ____ years old.

Thank You ☺

Appendix 5: Quantitative questionnaire informed consent script

"Hello, my name is Alice Will and I am a master's student at Memorial University of Newfoundland conducting research in collaboration with Wood Buffalo National Park. I'm interested in learning more about local people's opinions toward bison in the park. Your answers, combined with those of other residents, will be kept confidential and provide valuable insights into the way people feel about bison and how they should be managed. You are able to leave the interview at any point. Your responses, whether against, in favour, or neutral, are valuable, and we encourage you to answer all the questions. All information gathered will be kept strictly confidential. The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be compliance with Memorial University's ethics policy. In addition, the local Aboriginal groups have given the research their approval and a research license has been obtained from the Aurora Research Institute. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at (709) 864-2861. If you have any questions regarding the research, you may contact me, the principle investigator at alice.will@mun.ca or by telephone at (709) 764-0339. Would you be interested in participating in a 10-15min interview regarding your opinions about bison?"

If potential participant says yes, then proceed with the interview.

The public may access the results of this research through the Aurora Research Institute, the local Aboriginal governments, library facilities or by contacting Alice Will or the Department of Geography at:

Alice Will (Principal Researcher)
Email: alice.will@mun.ca

Geography Department
Memorial University of Newfoundland
Tel: (709) 864-7417

Appendix 6: Quantitative questionnaire

Integrating Human Dimensions Research in Wood Buffalo National Park: Understanding Attitudes, Beliefs, and Values toward Wood Bison and Bison Management

A project by Memorial University, in cooperation with Parks Canada and the Aboriginal groups of Fort Chipewyan, Fort Fitzgerald, & Fort Smith

Part I: Attitudes.

1. Which best describes your feelings toward buffalo inside WBNP?

   1☐ Strongly dislike 2☐ Dislike 3☐ Neither 4☐ Like 5☐ Strongly like

   A list of statements will be read. Please tell me which response best describes your opinion according to the following scale:
   1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2. My feelings toward buffalo in WBNP have changed over time.	**1**	**2**	**3**	**4**	**5**
3. Disease in buffalo has affected my feelings toward the animal.	**1**	**2**	**3**	**4**	**5**
4. I care whether buffalo become infected with disease.	**1**	**2**	**3**	**4**	**5**
5. It is important to minimize the risk of disease to neighbouring cattle.	**1**	**2**	**3**	**4**	**5**
6. It is important for humans to manage buffalo in WBNP.	**1**	**2**	**3**	**4**	**5**
7. It is important to minimize the risk of disease to neighbouring buffalo populations.	**1**	**2**	**3**	**4**	**5**
8. I support WBNP buffalo being treated and vaccinated against brucellosis.	**1**	**2**	**3**	**4**	**5**
9. I would support destroying the entire WBNP herd if	**1**	**2**	**3**	**4**	**5**

tuberculosis or brucellosis were transmitted to the uninfected buffalo herds.					
10. If it were possible to hunt buffalo in the park, the presence of disease would discourage me or my family from hunting.	**1**	**2**	**3**	**4**	**5**
11. I prefer wild game meat to store-bought meat.	**1**	**2**	**3**	**4**	**5**
12. I would accept buffalo meat from anyone if offered.	**1**	**2**	**3**	**4**	**5**
13. I feel the government agencies involved in wildlife management share the same values as me.	**1**	**2**	**3**	**4**	**5**
14. I feel the government agencies involved in wildlife management are effectively managing wood bison in the park.	**1**	**2**	**3**	**4**	**5**
15. If it were possible, my family or I would participate in hunting buffalo in the park.	**1**	**2**	**3**	**4**	**5**

16. How important, if at all, are buffalo to you?

	Not at all important	**Not important**	**Neutral**	**Somewhat important**	**Very important**
a. Ceremonial use:	**1**	**2**	**3**	**4**	**5**
b. Economic use:	**1**	**2**	**3**	**4**	**5**
c. Food use:	**1**	**2**	**3**	**4**	**5**
d. Spiritual use:	**1**	**2**	**3**	**4**	**5**

Part II: Beliefs. A list of statements will be read. Please tell me which response best describes your opinion according to the following scale:

1 = Generally False 2 = Not Sure 3 = Generally True

17. Treatments and vaccinations are a long-term solution to getting rid of	**1**	**2**	**3**

brucellosis.			
18. Less than half (50%) of buffalo in WBNP are infected with Tb.	**1**	**2**	**3**
19. Only 1/3 (30%) of WBNP buffalo are infected with brucellosis.	**1**	**2**	**3**
20. Anthrax is common among buffalo in WBNP.	**1**	**2**	**3**

21. How acceptable, if at all, are the following buffalo management options in the park?

	Not at all Acceptable	Slightly Unacceptable	Neither Acceptable or Unacceptable	Slightly Acceptable	Completely Acceptable
a. Vaccinations	**1**	**2**	**3**	**4**	**5**
b. Collaring/Tagging	**1**	**2**	**3**	**4**	**5**
c. Reducing the herd significantly	**1**	**2**	**3**	**4**	**5**
d. Relocating animals	**1**	**2**	**3**	**4**	**5**
e. Monitoring without physical contact	**1**	**2**	**3**	**4**	**5**
f. Do nothing	**1**	**2**	**3**	**4**	**5**

22. How likely, if at all, do you believe it is for humans to contract the following diseases from buffalo?

	Not at all Likely	**Not Likely**	**Neither**	**Somewhat Likely**	**Very Likely**
a. Tuberculosis	**1**	**2**	**3**	**4**	**5**
b. Brucellosis	**1**	**2**	**3**	**4**	**5**
c. Anthrax	**1**	**2**	**3**	**4**	**5**

23. The current population of buffalo in WBNP is:

Significantly Decreasing	Slightly Decreasing	Remaining the Same	Slightly Increasing	Significantly Increasing
1	2	3	4	5

24. The current population of buffalo in WBNP is: _____

Part III. Behaviour

25. I obtain ___ of my meat from hunting:

None	A little	About half	Most	All
1	2	3	4	5

26. Where do you get most of your information about wood bison in WBNP?

1☐ Newspaper 2☐ Television 3☐ Radio 4☐ WBNP Staff 5☐ WBNP Bulletins

6☐ WBNP Road Signs 7☐ Elders 8☐ School 9☐ Word of mouth / Community

10☐ Other: _____

27. On a scale of 1-10 how important is the issue of disease in wood bison to you personally?

1 2 3 4 5 6 7 8 9 10

28. Did you hunt buffalo last year? 1☐ Yes 2☐ No

29. Has your hunting behaviour of buffalo changed over the years? 1☐ Yes 2☐ No

If yes, why? _____

Part IV. Demographics

30. How many times have you visited WBNP in the past year? ___ Times.

31. Are you: 1☐ Male 2☐ Female

32. What is your age? _____ years

33. Where do you live?

1☐ Fort Chipewyan 2☐ Fort Fitzgerald 3☐ Fort Smith 4☐ Garden River

34. Do you self-identify with any of the following Aboriginal groups?

1☐ Athabasca Chipewyan First Nation
2☐ Little Red River Cree First Nation
3☐ Métis Local 125
4☐ Métis – Fort Smith
5☐ Mikisew Cree First Nation
6☐ Salt River First Nation
7☐ Smith's Landing First Nation
8☐ Other Aboriginal group
9☐ No, I am non-Aboriginal

35. Do you have any questions or comments that you would like to share?

Appendix 7: Interview schedule for semi-structured focus group interviews

Starting question: When I say the word "bison" or "buffalo", what first comes to mind?		
Behavioural Intentions to Support or Oppose Management Actions	**Beliefs about Disease in Wood Bison**	**Perceptions of Risk Regarding Disease**
- How important do you feel it is to minimize the risk of disease to neighbouring cattle and bison / buffalo populations? - Do you care whether bison / buffalo become infected with disease? - If it were possible, how likely would you or your family be to participate in hunting wood bison in the park? - Do you think that culling (killing) diseased bison / buffalo is an acceptable management decision? - In your view, what are acceptable bison / buffalo management options? - Would you support destroying the entire WBNP bison / buffalo herd if tuberculosis or brucellosis were transmitted to the uninfected bison / buffalo herds or cattle? - Do you obtain meat from hunting? - What kind of meat do you like to eat? Store-bought or locally hunted? - Can wildlife be managed in the same way as domestic livestock? - How has disease in bison / buffalo affected how much you value the animal? - Has your attitude toward bison / buffalo changed over time? How? Why? - How has disease in wood bison affected the community? - Would you say that this community	- Do you care if bison have disease? Why or why not? - Is it true that treatments and vaccinations for brucellosis work in curing bison / buffalo? - How many bison / buffalo do you believe exist in the park? - How many bison / buffalo in WBNP are infected with Tb? - How many bison / buffalo in WBNP are infected with brucellosis? - Do you believe that disease in bison / buffalo is getting worse (more disease) or better (less disease)? - Do you think humans have had an impact on disease in the bison / buffalo of WBNP?	- How likely, if at all, do you believe it is for humans to contract tuberculosis from wood bison? - How high do you think the risk is of bison outside the park becoming infected with disease from bison / buffalo within the park? - If it were possible to hunt bison / buffalo in the park, how much would the presence of disease deter you or your family from hunting? - Do you believe the bison / buffalo population in the park is increasing or decreasing? Why? - Do you think that bison / buffalo populations should be controlled? - Do you feel that government agencies involved in wildlife management share the same values as you? Why? - Do you feel that government agencies involved in wildlife management are effectively managing wood bison in the park? - Which methods do you approve of, if any, to control numbers of wood bison? - When would killing individual animals be acceptable? - Where do you get most of your information about wood bison?

feels a sense of worry, concern, or anxiety about risks coming from disease outbreak in wood bison? - How do you feel about buffalo/bison? - Are bison / buffalo important to you? How? - How do you think humans should manage, if at all, buffalo/bison in WBNP?		- How important is the issue of disease in wood bison to you personally?

Appendix 8: Complete list of emerging themes from focus group interviews (Unexplored themes *italicised*)

Theme	**Category**	**Subcategory**
Feelings & Knowledge regarding Bison		
	Condition of herd	
		Bison (general)
		Disease
	Hunting Bison	
		Influence of disease
		Respect for animal
		Culture & Rights (generational roles, value of wild meat)
		Tradition of sharing
		Preferences for different wild meats (species, age)
Park		
	Communication with local (Treaty) Aboriginal peoples	
		Trust issues
		Consultation
	Ecosystem	
		Observed changes in ecosystem (water levels, results of oil development)
Other	*Impacts of newcomers*	
	Curiosity about bison	
	Sightings of bison	